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FITTING A VON BERTALANFFY GROWTH CURVE BY LEAST SQUARES

Including Tables of Polynomials

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FOREWORD

The von Bertalanffy growth equation and the generalisations of it presented by Richards (1959), have in recent years proved most useful in studies of fish population dynamics and for the practical assessment of the status of exploited stocks and the effects of fisheries regulations. These equations are, therefore, being increasingly applied to a wide variety of data on the size and age of aquatic animals, and it has been evident that the rough and ready methods of determining parameter values—usually graphical ones—were not satisfactory for all the purposes to which they were being applied. For some purposes it is indeed sufficient that the calculated curve for chosen parameter values should graduate the observed data adequately, as judged by eye, although even in this case an objective, repeatable method of obtaining those values is obviously desirable. Recently, however, attention has been focused by fisheries biologists on the parameters themselves, with regard to their physiological significance, the effects of both biotic and abiotic environmental factors on them, and the relations between them and other population parameters such as natural mortality rates, fecundity, and maturity characteristics. Thus, the extent to which k or L_∞, or both, vary with food supply, and hence with population density was discussed at an early stage in the application of these equations and Taylor (1958, 1959) and Holt (1959, 1960) have considered the relation between k and water temperature.

At several recent international symposia various aspects of the application of the von Bertalanffy equation and the interpretation of its parameters, have been prominent in contributed papers and discussion of them. A general graphical method for examining the growth data has been published (Gulland and Holt, 1959) and the use of this and other methods in the analysis of fish tagging experiments was discussed at the North Atlantic Fish Marking Symposium organized by the International Commission for the Northwest Atlantic Fisheries at Woods Hole, Massachusetts, in June 1961 (*ICNAF Spec. Publ.* (4), in press). At the fifth Ciba Foundation Colloquium on Ageing, in London, 1959, dealing with the Lifespan of Animals, evidence was presented that the parameters L_∞ and k were correlated with natural mortality and life-span, both interspecifically and intra-specifically, and that the regression constants had a taxonomic significance. It was also suggested that these parameters might be related to the metabolic parameters for the species (see Beverton and

Holt, 1959). Again, at the Symposium on the Exploitation of Natural Animal Populations organised by the British Ecological Society in Durham, England, March 1960, a relation was demonstrated, on an inter-specific basis, between the growth parameters and the mean size of fish at maturity (Proceedings in press). To explore such lines of work further it was essential to have a method of parameter estimation which is quick and easy to apply, according to generally understood criteria, and for which estimates of variance are also available.

In a different field, but one of growing importance, suitable methods are needed for analysing the results of fish-culture experiments, and it seems likely that the application of forms of the generalised equation referred to here will prove more powerful and discriminatory than the usual procedure of considering growth increments over a measured time interval, or average specific growth rates, without reference to the ages and sizes of the fish in the experimental batches.

For all these reasons this exposition of a method for simple and rapid estimation by least squares, in the case where ages are equally spaced, but sample sizes are not necessarily constant, is to be welcomed at this time. The tables presented will be particularly useful, when, as we must recognise is usually the case, the fisheries research workers concerned do not have access to high speed computers.—*Sidney J. Holt, Chief, Fisheries Biology Branch, Food and Agriculture Organization of the United Nations, Rome, September 1961.*

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INTRODUCTION

Historically, the growth of animals has been described by a variety of functions which relate size increase to a unit of time. These functions vary from a straight-line relationship to the more complex asymptotic-type curve. The methods of fitting straight lines and simple curves, such as quadratic polynomials, are well documented and will not be mentioned further in this paper.

Fish growth is often represented by a function which is asymptotic to some average maximum size the fish will attain. A useful regression formula for representing these curves is

$$y = \alpha + \beta\rho^x \qquad (1)$$

where

$$0 < \rho < 1.$$

This regression formula has three parameters, with α representing the asymptotic value of y. Stevens (1951) showed the utility of this basic curve by writing Gompertz's law, the logistic curve, and Mitscherlich's law in this form. It is also possible to write the growth curves of von Bertalanffy (1938) in this way.

The objective of this paper is to present a useful method for fitting Beverton's (1954) modification of the von Bertalanffy growth-in-length curve, but the method is adaptable to any curve which can be written in the basic form of equation (1). The tables in the Appendix, and the worked example should provide sufficient information for fitting a von Bertalanffy curve. The physiological aspects of von Bertalanffy growth functions, including more general equations than that described here, are discussed by von Bertalanffy (1957).

In the past, the methods used to fit a von Bertalanffy curve to observed fish length have required inefficient techniques such as guessing-by-eye (von Bertalanffy, 1938) or approximation-through-transformation (Beverton and Holt, 1957; Ricker, 1958). The method presented in this paper is not only easy to use, but is based on the efficient, well-accepted technique of least squares. Under the assumption of normality, the least squares method produces estimates which are equivalent to maximum likelihood estimates.

With high speed electronic computing equipment, other iterative methods or an adaption of the described method may be used to obtain very accurate estimates of the parameters of the von Bertalanffy curve. Stevens (1951) developed an iterative procedure for fitting (1) and Nelder

(1961) gives an iterative method for fitting a generalized logistic curve which includes (1) as a special case. Nelder's method does not require the x's to be equally spaced and assumes a constant variance for log y rather than for y. However, the following description and the tables in the Appendix should be useful to workers who do not have access to an electronic computer.

ESTIMATING THE PARAMETERS

Pimentel-Gomes and Malavolta (1949) and Pimentel-Gomes (1953) described a procedure for estimating the parameters of the curve,

$$y = A[1 - 10^{-c(x+b)}]$$

by the method of least squares. This curve, introduced by Elih. Alfred Mitscherlich (1930), is known as Mitscherlich's regression law and has been used primarily with fertilizer experiments. Here, Pimentel-Gomes' method of estimation is extended to fit a form (Beverton, 1954) of the von Bertalanffy growth-in-length curve,

$$l_t = L_\infty[1 - e^{-k(t-t_0)}], \tag{2}$$

by the method of least squares, when there is an equal time interval between age groups.

Age Group Sample Sizes Equal

Consider the function

$$Q = \sum_{i,j}\{l_{ij} - L_\infty [1 - e^{-k(t_j - t_0)}]\}^2, \qquad \begin{matrix} i = 1, \ldots, r_j \\ j = 1, \ldots, p, \end{matrix}$$

where r_j is the number of fish sampled from the jth age group and p is the number of age groups.

Differentiating with respect to L_∞, k and t_0 and setting the partial derivatives equal to zero will give the following normal equations:

$$\begin{aligned}
&\sum_{i,j} l_{ij} - nL_\infty + L_\infty e^{kt_0} \sum_{i,j} e^{-kt_j} = 0 \\
&\sum_{i,j} l_{ij} t_j e^{-kt_j} - L_\infty \sum_{i,j} t_j e^{-kt_j} + L_\infty e^{kt_0} \sum_{i,j} t_j e^{-2kt_j} = 0 \\
&\sum_{i,j} l_{ij} e^{-kt_j} - L_\infty \sum_{i,j} e^{-kt_j} + L_\infty e^{kt_0} \sum_{i,j} e^{-2kt_j} = 0,
\end{aligned} \tag{3}$$

where

l_{ij} = length of the ith fish belonging to the jth age group
t_j = age of fish in the jth age group, $t_1 = 0$
L_∞ = maximum expected length
t_0 = hypothetical age at zero length
k = constant which is proportional to the rate of destruction of body materials
$n = \Sigma r_j$.

L_∞, t_0 and k are the parameters to be estimated in fitting the von Bertalanffy curve.

Following the solution of Pimentel-Gomes (1953), let $t_j = m_j q$, where q is a constant interval between ages and m_j is an integer. Also let $z = e^{-kq}$. Then, if a nontrivial solution of (3) exists,

$$\begin{vmatrix} \sum_{i,j} l_{ij} & n & \sum_{i,j} z^{m_j} \\ \sum_{i,j} t_j l_{ij} z^{m_j} & \sum_{i,j} t_j z^{m_j} & \sum_{i,j} t_j z^{2m_j} \\ \sum_{i,j} l_{ij} z^{m_j} & \sum_{i,j} z^{m_j} & \sum_{i,j} z^{2m_j} \end{vmatrix} = 0. \qquad (4)$$

In the case where there is a constant number of measurements within each age group ($r_j = r$ for all j), the expansion of this determinant along the first column and division by $qr^3 z(1 - z)^3$ yields

$$\bar{l}_1 J_{p1}(z) + \ldots + \bar{l}_j J_{pj}(z) + \ldots + \bar{l}_p J_{pp}(z) = 0, \qquad (5)$$

where $\bar{l}_j$ is the mean length of the fish in the jth age group.

By using the polynomial (5) and the tables of $J_{pj}(z)$ listed in the Appendix, z can be obtained by successive trials. If the sign of equation (5) at $z = 0.01$ differs from the sign at $z = 0.99$, z may be estimated by using the tables. When the point is reached such that the solution gives a sign at $z = a$ which is different from that at $a + 0.01$, linear interpolation is used to find the zero solution.

With z, estimating L_∞, t_0 and k is reduced to simple algebra. Since

$$z = e^{-kq},$$

then

$$k = \frac{1}{q} \log_e z^{-1}. \qquad (6)$$

From (3), omitting one equation,

$$\sum_{i,j} l_{ij} = nL_\infty - L_\infty e^{kt_0} \sum_{i,j} e^{-kt_j}$$

$$\sum_{i,j} l_{ij} e^{-kt_j} = L_\infty \sum_{i,j} e^{-kt_j} - L_\infty e^{kt_0} \sum_{i,j} e^{-2kt_j} \quad (7)$$

System (7) can be solved as two linear equations in two unknowns, L_∞ and t_0. The solution of (7) is obtained by letting

$$B = L_\infty e^{kt_0}$$
$$z^{m_j} = e^{-kt_j}.$$

Dividing (7) by r,

$$\sum_j \bar{l}_j = pL_\infty - B \sum_j z^{m_j}$$

$$\sum_j \bar{l}_j z^{m_j} = L_\infty \sum_j z^{m_j} - B \sum_j z^{2m_j} \quad (8)$$

where $\bar{l}_j$ = observed mean length for jth age group and $m_j = j - 1$. Using determinants, the solution of (8) is

$$D = \left(\sum_j z^{m_j}\right)^2 - p \sum_j z^{2m_j}$$

$$\hat{L}_\infty = \frac{1}{D} \left(\sum_j \bar{l}_j z^{m_j} \sum_j z^{m_j} - \sum_j \bar{l}_j \sum_j z^{2m_j} \right) \quad (9)$$

$$\hat{B} = \frac{1}{D} \left(p \sum_j \bar{l}_j z^{m_j} - \sum_j \bar{l}_j \sum_j z^{m_j} \right)$$

and

$$\hat{t}_0 = \frac{1}{k} \log_e (\hat{B}/\hat{L}_\infty). \quad (10)$$

This solution fits the curve to the mean lengths of the age groups and can be applied to any data listed as

$$\bar{l}_1, \bar{l}_2, \ldots, \bar{l}_p.$$

For an equal number of observations in each age group, a true least squares line is obtained when the variances of the l_{ij} are assumed equal.

Age Group Sample Sizes Not All Equal

Usually a collection of age-length data does not contain an equal number of observations from each age group. In this situation, equal-sized random sub-samples may be selected from the age groups containing a sufficient number of observations, or all of the data may be used. If the latter choice is made, a weighted least squares fitting procedure is appropriate.

Let

$$Q_w = \sum_j w_j\{\bar{l}_j - L_\infty[1 - e^{-k(t_j - t_0)}]\}^2$$

be the sum of weighted squared residuals which is to be minimized, where

$$\bar{l}_j = \frac{1}{r_j}\sum_i l_{ij}$$

and w_j is the non-negative weight associated with the jth age group. The differentiation of this function with respect to the parameters results in a set of normal equations. When the substitutions of the previous section are performed for t_j and e^{-kq}, the equation

$$\begin{vmatrix} \sum_j w_j\bar{l}_j & \sum_j w_j & \sum_j w_j z^{m_j} \\ \sum_j w_j\bar{l}_j t_j z^{m_j} & \sum_j w_j t_j z^{m_j} & \sum_j w_j t_j z^{2m_j} \\ \sum_j w_j\bar{l}_j z^{m_j} & \sum_j w_j z^{m_j} & \sum_j w_j z^{2m_j} \end{vmatrix} = 0, \qquad (11)$$

which is analagous to (4), may be obtained. An iterative procedure is used to obtain z, and the rest of the solution follows the method for the case of equal sample sizes. Because the w_j are factors of the polynomials, a separate solution is required for each set of weights and preparing tables is not practical.

The w_j should be inversely proportional to the variances of the $\bar{l}_j$, so that if the variance is assumed constant for all observations, $w_j = n_j/n$ (n_j is the number of observations on the jth age group) is an appropriate weight.

THE VARIANCES OF THE PARAMETER ESTIMATES FOR EQUAL SAMPLE SIZES

With an equal number of observations in each age group and assuming equal variances for the l_{ij}, it is possible to determine the variances of the estimates of the parameters. However, it should be kept in mind that the distribution of these estimated parameters will, in general, be unknown so that caution is needed in interpreting the variances.

The solutions for the variances follow the method of Pimentel-Gomes (1953), which is derived from that of Stevens (1951). Writing these solutions, using the notation of Stevens (1951), gives

$$
\begin{aligned}
V(\hat{L}_\infty) &= F_{aa}s^2/r \\
V(\hat{k}) &= F_{rr}s^2/r(qzB)^2 \qquad (12) \\
V(\hat{t}_0) &= \frac{q^2s^2\,(\log_{10}e)^2}{r\,(\log_{10}z)^2}\left[\left(\frac{1}{L_\infty}\right)^2 F_{aa} + \left(\frac{1}{-B}\right)^2 F_{bb} + \left(\frac{u}{-B}\right)^2 F_{rr}\right. \\
&\quad \left. - \left(\frac{2}{-BL_\infty}\right)F_{ab} - \left(\frac{2u}{-BL_\infty}\right)F_{ar} + \left(\frac{2u}{B^2}\right)F_{br}\right],
\end{aligned}
$$

where

$u = (\log_{10} L_\infty/B)/z \log_{10} z$
s^2 = residual variance
r = number of observations in each age group

and $F_{aa}, F_{bb}, F_{rr}, F_{ab}, F_{ar}, F_{br}$ are components of the reciprocal of the matrix,

$$
\begin{bmatrix}
p & \sum_j z^{m_j} & z^{-1}\sum_j m_j z^{m_j} \\
\sum_j z^{m_j} & \sum_j z^{2m_j} & z^{-1}\sum_j m_j z^{2m_j} \\
z^{-1}\sum_j m_j z^{m_j} & z^{-1}\sum_j m_j z^{2m_j} & z^{-2}\sum_j m_j^2 z^{2m_j}
\end{bmatrix}. \qquad (13)
$$

Computing the reciprocal of (13) gives

$$
\begin{bmatrix}
F_{aa} & F_{ab} & F_{ar} \\
F_{ab} & F_{bb} & F_{br} \\
F_{ar} & F_{br} & F_{rr}
\end{bmatrix}. \qquad (14)
$$

The residual variance, s^2, may be computed from

$$
s^2 = \sum_{i,j}(l_{ij} - \hat{l}_j)^2/(n-3) \qquad (15)
$$

where $\hat{l}_j$ = expected mean length of the jth age as computed from the fitted line.

EXAMPLE SOLUTION

Estimating the Parameters

For this example, the data in Table 1 were randomly chosen from the length-at-age information available for California yellowtail (*Seriola dorsalis*). The ages are the actual ages at the time of capture. A von Bertalanffy curve was fitted to the complete data by Baxter, *et al.* (1960) using the method described by Beverton and Holt (1957). The original data were considered random, and after stratifying these by age groups, a simple random sample of 11 measurements was chosen from within each of the first eight age groups.

TABLE 1

Lengths in Millimeters by Age Group for California Yellowtail, *Seriola dorsalis*

	Age Group								
	I	II	III	IV	V	VI	VII	VIII	
	480	636	659	735	887	834	855	993	
	548	688	645	837	843	844	915	964	
	503	699	666	777	858	934	940	967	
	485	652	662	748	894	882	905	962	
	595	662	637	772	841	892	854	909	
	497	554	762	790	787	839	914	1020	
	583	559	666	749	846	861	862	925	
	442	668	652	764	834	865	859	922	
	475	645	733	763	806	934	895	909	
	530	559	634	800	805	876	922	969	
	468	622	685	745	759	904	903	982	
Sum	5606	6944	7401	8480	9160	9665	9824	10522	
$\bar{l}_j$	509.64	631.27	672.82	770.91	832.73	878.64	893.09	956.55	$n=88$

Since the first age is $t_1 = 1$, and the method of fitting requires $t_1 = 0$, it is necessary to subtract 1 from each t_j. Then,

$$\begin{aligned} t'_j &= t_j - 1 \\ t'_0 &= t_0 - 1. \end{aligned} \tag{16}$$

The line now being fitted is

$$l'_t = L_\infty[1 - e^{-k(t'-t'_0)}]. \tag{17}$$

The value of z is found by using the table for $J_{8j}(z)$ and formula (5). Table 2 demonstrates the technique. Now, from equation (6), with $q = 1$ and $z = 0.8373$ (by linear interpolation in Table 2),

$$\hat{k} = \log_e \frac{1}{0.8373} = 0.1776. \tag{18}$$

For the solution of the system (8) it is necessary to compute the values in Table 3.

Then, using (9)

$$D = (4.661504)^2 - (8)(3.150056) = -3.470828$$

$$\hat{L}_\infty = \frac{-3896.903013}{-3.470828} = 1122.759 \qquad (19)$$

$$\hat{B} = \frac{-2111.958014}{-3.470828} = 608.488\,,$$

and from equation (10)

$$\hat{t'}_0 = \left(\frac{1}{0.1776}\right) \log_e \frac{608.488}{1122.759} = -3.4493 \qquad (20)$$

or from equation (16)

$$\hat{t}_0 = -2.4493.$$

To find the fitted lengths at age t, it is only necessary to evaluate equation (2) as in Table 4.

TABLE 2

Finding z by Successive Trials

Mean Length	$\bar{l}_1$	$\bar{l}_2$	$\bar{l}_3$	$\bar{l}_4$	$\bar{l}_5$	$\bar{l}_6$	$\bar{l}_7$	$\bar{l}_8$	$\sum_{j=1}^{8} \bar{l}_j J_{8j}(z)$
	509.6	631.3	672.8	770.9	832.7	878.6	893.1	956.6	
	$J_{81}(z)$	$J_{82}(z)$	$J_{83}(z)$	$J_{84}(z)$	$J_{85}(z)$	$J_{86}(z)$	$J_{87}(z)$	$J_{88}(z)$	
$z = 0.01$	0	−6	1	1	1	1	1	1	1216.9
$z = 0.99$	1086	139	−481	−782	−769	−450	171	1086	−129412.9
$z = 0.50$	22	−29	−28	−14	0	10	17	21	7329.8
$z = 0.90$	526	−9	−305	−402	−339	−146	150	526	−26162.2
$z = 0.80$	235	−52	−174	−187	−128	−26	99	234	8535.0
$z = 0.84$	324.381	−43.291	−219.050	−254.895	−191.100	−58.632	118.901	323.686	−714.9807
$z = 0.83$	299.248	−46.237	−207.033	−235.949	−173.179	−49.059	113.737	298.472	1909.9154

TABLE 3

Values for Solving System (8)

m_j	z^{m_j}	z^{2m_j}	$\bar{l}_j$	$\bar{l}_j z^{m_j}$
0	1.000000	1.000000	509.6	509.6
1	0.837300	0.701071	631.3	528.58749
2	0.701071	0.491501	672.8	.
3	0.587007	0.344577	770.9	.
4	0.491501	0.241573	832.7	.
5	0.411534	0.169360	878.6	.
6	0.344577	0.118733	893.1	.
7	0.288514	0.083241	956.6	.
Totals	4.661504	3.150056	6145.6	3316.9726213

TABLE 4

Computing the Fitted Lengths

$$l_t = 1122.8\,[1 - e^{-0.1776(t+2.4493)}]$$

t	$t + 2.4493$	$(0.1776)(t + 2.4493)$	$e^{-0.1776(t+2.4493)}$	$1 - e^{-0.1776(t+2.4493)}$	$\hat{l}_t$
1	3.4493	0.61260	0.54194	0.45806	514.31
2	4.4493	0.79020	0.45375	0.54625	613.33
3	5.4493	0.96780	0.37992	0.62008	696.23
4	6.4493	1.14540	0.31810	0.68190	765.64
5	7.4493	1.32300	0.26634	0.73366	823.75
6	8.4493	1.50060	0.22300	0.77700	872.42
7	9.4493	1.67820	0.18671	0.81329	913.16
8	10.4493	1.85580	0.15633	0.84367	947.27

Estimating the Variance

The values for the components of matrix (13) can be obtained from Table 3.

Thus, solving for the components of (13) yields

$$\begin{bmatrix} 8 & 4.661504 & 14.464584 \\ 4.661504 & 3.150056 & 6.958056 \\ 14.464584 & 6.958056 & 31.695266 \end{bmatrix}. \tag{21}$$

The inverse of matrix (21) will contain the components of the matrix (14), which are

$$\begin{aligned} F_{aa} &= 26.477509 & F_{bb} &= 22.827520 \\ F_{ab} &= -24.250721 & F_{br} &= 6.055839 \\ F_{ar} &= -6.759631 & F_{rr} &= 1.786966 \end{aligned} \tag{22}$$

The residual variance is calculated using the right hand side of the identity

$$\sum_{i,j}(l_{ij} - \hat{l}_j)^2 = \sum_{i,j} l_{ij}^2 - 2\sum_j \hat{l}_j \sum_i l_{ij} + r\sum_j \hat{l}_j^2.$$

From values in Tables 1 and 4,

$$\sum_{i,j} l_{ij}^2 = 53842822,\ r\sum_j \hat{l}_j^2 = 53707408.095, \text{ and } \sum_j 2\hat{l}_j \sum_i l_{ij}$$

$$= 107406317.78.$$

Therefore, from equation (15), $s^2 = 1693.086$.

Using (12), (15), (19) and (22) gives $V(\hat{L}_\infty) = 4075.336$, $V(\hat{k}) = 0.001060$, and $V(\hat{t'}_0) = 0.1970$, and since $t_0 = t'_0 + 1$, $V(\hat{t}_0) = V(\hat{t'}_0) = 0.1970$.

SUMMARY

The von Bertalanffy growth-in-length curve,

$$l_t = L_\infty[1 - e^{-k(t-t_0)}],$$

is often used to describe fish growth.

When the ages are equally spaced, this function may be fitted by least squares using a technique developed by Pimentel-Gomes and Malavolta (1949) for fitting Mitscherlich's Law.

The solution involves writing the matrix of the coefficients of the normal equations as a function of one unknown, $z = e^{-kq}$. A solution for z is obtained by setting the determinant of the matrix equal to zero and solving by iteration. The three parameters of the curve are then easily estimated.

Where the sample sizes for each age group are equal, tables of polynominals make possible a rapid solution. The polynomials, $J_{pj}(z)$, are tabled for fitting the curve to data with from 4 to 18 age groups.

Unequal sample sizes require a weighted solution for which tables are not practical.

In the case of equal sample sizes, variances of the estimated parameters may be obtained by using a method of Stevens (1951).

A worked example illustrates the method of curve fitting and variance estimation for the equal-sample-size situation.

REFERENCES

Baxter, John L., and a staff of associates.
1960. A study of the yellowtail, *Seriola dorsalis* (Gill). Calif. Dept. Fish and Game, Fish Bull. 110, 96 p.

Beverton, Raymond J. H.
1954. Notes on the use of theoretical models in the study of the dynamics of exploited fish populations. U. S. Fish and Wildl. Serv., Fish. Lab., Beaufort, Misc. Contrib., no. 2, 181 p. (Processed)

Beverton, Raymond J. H., and Sidney Holt
1957. On the dynamics of exploited fish populations. Min. Agric., Fish. and Food, Fish. Invest., ser. 2, vol. 19, 533 p.
1959. A review of the lifespans and mortality rates of fish in nature, and their relation to growth and other physiological characteristics. Ciba Found. Symposium on the Lifespan of Animals, 1959, p. 142-177.

Deming, W. Edwards
1943. Statistical adjustment of data. New York, John Wiley and Sons, Inc., 261 p.

Pimentel-Gomes, Frederico
1953. The use of Mitscherlich's Regression Law in the analysis of experiments with fertilizers. Biometrics, vol. 9, no. 4, p. 498-516.

Pimentel-Gomes, Frederico, and Eurípedes Malavolta
1949. Aspectos matemáticos e estatísticos de Lei de Mitscherlich. Anais Esc. Sup. Agr. "Luiz de Queiroz", vol. 6, p. 193-229.

Gulland, J. A., and S. J. Holt
1959. Estimation of growth parameters for data at unequal time intervals. Jour. Cons. Inter. Explor. Mer, vol. 25, no. 1, p. 47-49.

Holt, S. J.
1959. Water temperature and cod growth-rate. Jour. Cons. Inter. Explor. Mer, vol. 24, no. 2, p. 374-376.
1960. Letter to Editor. Jour. Cons. Inter. Explor. Mer, vol. 25, no. 2, p. 225-228.

Mitscherlich, E. A.
1930. Die Bestimmung des Dungerbedurfnisses des Bodens. 3rd ed. Berlin, Paul Parey.

Nelder, J. A.
1961. The fitting of a generalization of the logistic curve. Biometrics, vol. 17, no. 1, p. 89-110.

Richards, F. J.
1959. A flexible growth function for empirical use. Jour. Exp. Bot., vol. 10, no. 29, p. 290-300.

Ricker, W. E.
1958. Handbook of computations for biological statistics of fish populations. Fish. Res. Bd. Canada, Bull. 119, 300 p.

Stevens, W. L.
1951. Asymptotic regression. Biometrics, vol. 7, no. 3, p. 247-267.

Taylor, C. C.
1958. Cod growth and temperature. Jour. Cons. Inter. Explor. Mer, vol. 23, no. 3, p. 366-370.
1959. Temperature and growth—the Pacific razor clam. Jour. Cons. Inter. Explor. Mer, vol. 25, no. 1, p. 93-101.

von Bertalanffy, Ludwig
1938. A quantitative theory of organic growth. (Inquiries on growth laws II.) Human Biology, vol. 10, no. 2, p. 181-213.
1957. Quantitative laws in metabolism and growth. Quar. Rev. Biol., vol. 32, no. 3, p. 217-231.

Williams, E. J.
1959. Regression analysis. New York, John Wiley and Sons, Inc., 214 p.

APPENDIX

Tables of Polynomials $J_{pj}(z)$

These are the tabulation of

$$J_{pj}(z) = \Big[\sum_j m_j z^{m_j} \sum_j z^{2m_j} - \sum_j z^{m_j} \sum_j m_j z^{2m_j} + m_j z^{m_j} \Big(\sum_j z^{m_j}\Big)^2 - p m_j z^{m_j} \sum_j z^{2m_j} + p z^{m_j} \sum_j m_j z^{2m_j} - z^{m_j} \sum_j z^{m_j} \sum_j m_j z^{m_j}\Big] / z(1 - z)^3,$$

$(j = 1, \ldots, p;\ m_j = j - 1)$, for $0.01 \leq z \leq 0.99$ by an increment in z of 0.01, and for $4 \leq p \leq 18$. Because the division by $z(1 - z)^3$ was performed numerically, values for $z = 0$ and $z = 1$ could not be obtained. In the column headings of the tables, $J_{pj}(z)$ is represented by **J p,j**.

The calculations were performed in double-precision arithmetic on the IBM 7090 computer at Western Data Processing Center, University of California, Los Angeles. With the 7090 FORTRAN II program, tables for any value of p and any interval in z can be compiled. The program utilizes a double-precision subroutine developed by the Rocketdyne Division of North American Aviation, Inc. The tabled values should be accurate to eight significant digits.

z	J 4, 1	J 4, 2	J 4, 3	J 4, 4
.01	0.020	−2.040	0.980	1.040
.02	0.041	−2.081	0.959	1.081
.03	0.063	−2.123	0.937	1.123
.04	0.085	−2.165	0.915	1.165
.05	0.108	−2.208	0.892	1.208
.06	0.132	−2.251	0.868	1.251
.07	0.156	−2.295	0.844	1.295
.08	0.181	−2.340	0.819	1.340
.09	0.207	−2.386	0.793	1.386
.10	0.234	−2.432	0.766	1.432
.11	0.262	−2.479	0.738	1.479
.12	0.290	−2.526	0.709	1.527
.13	0.320	−2.575	0.680	1.575
.14	0.350	−2.624	0.649	1.624
.15	0.382	−2.674	0.618	1.674
.16	0.414	−2.724	0.586	1.725
.17	0.447	−2.776	0.552	1.777
.18	0.482	−2.828	0.517	1.829
.19	0.517	−2.881	0.482	1.882
.20	0.554	−2.934	0.445	1.936
.21	0.591	−2.989	0.407	1.991
.22	0.630	−3.044	0.368	2.046
.23	0.670	−3.100	0.327	2.103
.24	0.711	−3.157	0.285	2.160
.25	0.754	−3.215	0.242	2.219
.26	0.798	−3.273	0.198	2.278
.27	0.843	−3.333	0.152	2.338
.28	0.889	−3.393	0.105	2.399
.29	0.937	−3.454	0.056	2.461
.30	0.986	−3.516	0.006	2.524
.31	1.037	−3.579	−0.046	2.588
.32	1.089	−3.642	−0.099	2.653
.33	1.142	−3.707	−0.154	2.719
.34	1.197	−3.772	−0.211	2.785
.35	1.254	−3.838	−0.269	2.853
.36	1.312	−3.905	−0.329	2.922
.37	1.372	−3.973	−0.391	2.992
.38	1.434	−4.042	−0.454	3.063
.39	1.497	−4.112	−0.520	3.135
.40	1.562	−4.182	−0.587	3.208
.41	1.628	−4.254	−0.656	3.282
.42	1.697	−4.326	−0.728	3.357
.43	1.767	−4.400	−0.801	3.434
.44	1.839	−4.474	−0.876	3.511
.45	1.913	−4.549	−0.954	3.590
.46	1.989	−4.625	−1.034	3.669
.47	2.067	−4.702	−1.116	3.750
.48	2.147	−4.779	−1.200	3.832
.49	2.229	−4.858	−1.286	3.916
.50	2.312	−4.937	−1.375	4.000

Z	J 4, 1	J 4, 2	J 4, 3	J 4, 4
.51	2.399	−5.018	−1.466	4.086
.52	2.487	−5.099	−1.560	4.172
.53	2.577	−5.182	−1.656	4.260
.54	2.670	−5.265	−1.755	4.350
.55	2.765	−5.349	−1.856	4.440
.56	2.862	−5.434	−1.960	4.532
.57	2.961	−5.520	−2.067	4.625
.58	3.063	−5.606	−2.176	4.719
.59	3.167	−5.694	−2.288	4.815
.60	3.274	−5.782	−2.403	4.912
.61	3.383	−5.872	−2.521	5.010
.62	3.494	−5.962	−2.642	5.110
.63	3.608	−6.053	−2.766	5.211
.64	3.725	−6.145	−2.893	5.313
.65	3.845	−6.238	−3.023	5.417
.66	3.967	−6.332	−3.156	5.522
.67	4.091	−6.427	−3.293	5.628
.68	4.219	−6.522	−3.433	5.736
.69	4.349	−6.619	−3.576	5.845
.70	4.482	−6.716	−3.722	5.956
.71	4.618	−6.814	−3.872	6.068
.72	4.757	−6.913	−4.026	6.182
.73	4.899	−7.013	−4.183	6.297
.74	5.044	−7.113	−4.343	6.413
.75	5.191	−7.215	−4.508	6.531
.76	5.342	−7.317	−4.676	6.651
.77	5.496	−7.420	−4.848	6.772
.78	5.654	−7.524	−5.024	6.894
.79	5.814	−7.629	−5.203	7.018
.80	5.978	−7.734	−5.387	7.144
.81	6.145	−7.841	−5.575	7.271
.82	6.315	−7.948	−5.767	7.400
.83	6.488	−8.056	−5.963	7.530
.84	6.665	−8.164	−6.163	7.662
.85	6.846	−8.274	−6.368	7.796
.86	7.030	−8.384	−6.577	7.931
.87	7.218	−8.495	−6.791	8.068
.88	7.409	−8.606	−7.008	8.206
.89	7.604	−8.719	−7.231	8.346
.90	7.802	−8.832	−7.458	8.488
.91	8.004	−8.946	−7.690	8.631
.92	8.210	−9.060	−7.927	8.777
.93	8.420	−9.175	−8.168	8.923
.94	8.634	−9.291	−8.415	9.072
.95	8.852	−9.408	−8.666	9.222
.96	9.073	−9.525	−8.922	9.374
.97	9.299	−9.643	−9.184	9.528
.98	9.528	−9.761	−9.451	9.684
.99	9.762	−9.880	−9.723	9.841

Z	J 5, 1	J 5, 2	J 5, 3	J 5, 4	J 5, 5
.01	0.031	−3.071	0.959	1.040	1.041
.02	0.062	−3.144	0.916	1.080	1.085
.03	0.096	−3.218	0.872	1.120	1.131
.04	0.130	−3.295	0.825	1.160	1.180
.05	0.167	−3.374	0.776	1.200	1.232
.06	0.204	−3.454	0.725	1.239	1.286
.07	0.244	−3.537	0.671	1.279	1.343
.08	0.285	−3.622	0.615	1.318	1.403
.09	0.328	−3.709	0.557	1.357	1.467
.10	0.373	−3.798	0.496	1.396	1.533
.11	0.421	−3.890	0.432	1.435	1.603
.12	0.470	−3.984	0.365	1.473	1.676
.13	0.522	−4.081	0.295	1.511	1.753
.14	0.576	−4.179	0.222	1.548	1.833
.15	0.633	−4.281	0.146	1.585	1.917
.16	0.692	−4.385	0.067	1.621	2.005
.17	0.754	−4.492	−0.016	1.657	2.097
.18	0.819	−4.601	−0.103	1.692	2.193
.19	0.888	−4.713	−0.193	1.726	2.293
.20	0.959	−4.829	−0.288	1.760	2.397
.21	1.034	−4.946	−0.387	1.792	2.506
.22	1.113	−5.067	−0.490	1.824	2.620
.23	1.195	−5.191	−0.597	1.854	2.739
.24	1.282	−5.318	−0.709	1.883	2.862
.25	1.372	−5.448	−0.826	1.911	2.991
.26	1.467	−5.581	−0.948	1.938	3.125
.27	1.566	−5.718	−1.075	1.962	3.265
.28	1.670	−5.858	−1.208	1.986	3.410
.29	1.779	−6.001	−1.347	2.007	3.561
.30	1.893	−6.147	−1.491	2.027	3.718
.31	2.013	−6.297	−1.641	2.044	3.881
.32	2.138	−6.451	−1.798	2.059	4.051
.33	2.270	−6.608	−1.961	2.072	4.228
.34	2.407	−6.768	−2.132	2.082	4.411
.35	2.551	−6.933	−2.309	2.089	4.602
.36	2.701	−7.101	−2.494	2.094	4.799
.37	2.859	−7.272	−2.686	2.095	5.005
.38	3.023	−7.448	−2.886	2.093	5.218
.39	3.196	−7.627	−3.095	2.087	5.439
.40	3.376	−7.811	−3.312	2.077	5.669
.41	3.565	−7.998	−3.538	2.064	5.907
.42	3.762	−8.189	−3.773	2.046	6.154
.43	3.968	−8.385	−4.017	2.023	6.410
.44	4.184	−8.584	−4.271	1.996	6.676
.45	4.409	−8.788	−4.536	1.963	6.951
.46	4.644	−8.995	−4.811	1.925	7.237
.47	4.890	−9.207	−5.097	1.881	7.532
.48	5.147	−9.423	−5.394	1.831	7.838
.49	5.415	−9.643	−5.703	1.774	8.156
.50	5.695	−9.867	−6.023	1.711	8.484

Z	J 5, 1	J 5, 2	J 5, 3	J 5, 4	J 5, 5
.51	5.988	−10.096	−6.357	1.640	8.825
.52	6.293	−10.328	−6.703	1.562	9.177
.53	6.611	−10.565	−7.063	1.475	9.542
.54	6.943	−10.807	−7.436	1.380	9.919
.55	7.289	−11.052	−7.823	1.276	10.310
.56	7.651	−11.302	−8.226	1.163	10.714
.57	8.027	−11.556	−8.643	1.040	11.132
.58	8.420	−11.814	−9.076	0.906	11.564
.59	8.829	−12.076	−9.525	0.761	12.011
.60	9.255	−12.342	−9.991	0.605	12.474
.61	9.699	−12.613	−10.474	0.436	12.952
.62	10.161	−12.887	−10.975	0.255	13.446
.63	10.643	−13.166	−11.494	0.061	13.957
.64	11.144	−13.448	−12.033	−0.148	14.485
.65	11.666	−13.734	−12.590	−0.371	15.030
.66	12.208	−14.024	−13.168	−0.610	15.593
.67	12.773	−14.318	−13.766	−0.865	16.176
.68	13.361	−14.616	−14.386	−1.136	16.777
.69	13.972	−14.917	−15.027	−1.425	17.398
.70	14.607	−15.221	−15.691	−1.733	18.039
.71	15.267	−15.529	−16.379	−2.060	18.700
.72	15.954	−15.840	−17.090	−2.407	19.384
.73	16.667	−16.154	−17.826	−2.775	20.089
.74	17.408	−16.471	−18.587	−3.166	20.816
.75	18.177	−16.791	−19.374	−3.579	21.567
.76	18.977	−17.114	−20.188	−4.016	22.342
.77	19.806	−17.439	−21.030	−4.478	23.141
.78	20.668	−17.766	−21.900	−4.967	23.965
.79	21.562	−18.095	−22.800	−5.482	24.815
.80	22.490	−18.427	−23.729	−6.026	25.692
.81	23.452	−18.759	−24.689	−6.599	26.595
.82	24.450	−19.094	−25.680	−7.204	27.527
.83	25.486	−19.429	−26.704	−7.840	28.487
.84	26.559	−19.765	−27.762	−8.509	29.477
.85	27.672	−20.102	−28.854	−9.214	30.497
.86	28.826	−20.440	−29.980	−9.954	31.548
.87	30.021	−20.777	−31.143	−10.732	32.631
.88	31.259	−21.114	−32.343	−11.548	33.746
.89	32.542	−21.451	−33.581	−12.406	34.895
.90	33.871	−21.786	−34.858	−13.305	36.078
.91	35.247	−22.120	−36.175	−14.248	37.297
.92	36.672	−22.453	−37.533	−15.237	38.551
.93	38.146	−22.783	−38.933	−16.273	39.843
.94	39.672	−23.111	−40.376	−17.357	41.172
.95	41.252	−23.436	−41.863	−18.493	42.541
.96	42.886	−23.758	−43.395	−19.681	43.949
.97	44.576	−24.075	−44.974	−20.924	45.398
.98	46.324	−24.389	−46.600	−22.223	46.889
.99	48.131	−24.697	−48.275	−23.581	48.422

Z	J 6, 1	J 6, 2	J 6, 3	J 6, 4	J 6, 5	J 6, 6
.01	0.041	−4.102	0.938	1.040	1.041	1.041
.02	0.084	−4.206	0.874	1.079	1.085	1.085
.03	0.129	−4.314	0.806	1.117	1.131	1.132
.04	0.176	−4.425	0.734	1.154	1.180	1.181
.05	0.225	−4.540	0.659	1.191	1.231	1.234
.06	0.277	−4.658	0.580	1.226	1.285	1.290
.07	0.332	−4.780	0.497	1.261	1.342	1.349
.08	0.389	−4.906	0.409	1.294	1.401	1.413
.09	0.450	−5.035	0.317	1.325	1.463	1.480
.10	0.513	−5.169	0.221	1.355	1.528	1.552
.11	0.580	−5.307	0.119	1.384	1.596	1.628
.12	0.651	−5.450	0.012	1.410	1.667	1.709
.13	0.726	−5.597	−0.101	1.435	1.742	1.795
.14	0.804	−5.748	−0.219	1.458	1.819	1.887
.15	0.887	−5.905	−0.344	1.478	1.899	1.984
.16	0.975	−6.066	−0.474	1.495	1.982	2.088
.17	1.068	−6.233	−0.612	1.510	2.069	2.198
.18	1.166	−6.404	−0.757	1.522	2.159	2.315
.19	1.269	−6.582	−0.909	1.530	2.252	2.439
.20	1.379	−6.765	−1.069	1.535	2.349	2.570
.21	1.495	−6.953	−1.237	1.536	2.449	2.710
.22	1.617	−7.148	−1.414	1.533	2.553	2.859
.23	1.747	−7.349	−1.600	1.526	2.660	3.016
.24	1.884	−7.556	−1.795	1.514	2.770	3.183
.25	2.029	−7.770	−2.001	1.496	2.884	3.360
.26	2.183	−7.990	−2.216	1.474	3.002	3.547
.27	2.346	−8.217	−2.443	1.445	3.123	3.746
.28	2.519	−8.451	−2.682	1.409	3.248	3.957
.29	2.702	−8.693	−2.932	1.367	3.376	4.180
.30	2.895	−8.942	−3.196	1.317	3.508	4.416
.31	3.100	−9.198	−3.472	1.260	3.643	4.666
.32	3.318	−9.462	−3.763	1.194	3.782	4.931
.33	3.548	−9.734	−4.068	1.118	3.924	5.211
.34	3.792	−10.015	−4.389	1.033	4.070	5.508
.35	4.051	−10.303	−4.725	0.938	4.219	5.821
.36	4.325	−10.601	−5.079	0.831	4.371	6.153
.37	4.616	−10.907	−5.450	0.712	4.525	6.504
.38	4.923	−11.221	−5.840	0.581	4.683	6.874
.39	5.250	−11.545	−6.250	0.435	4.844	7.266
.40	5.596	−11.878	−6.679	0.275	5.007	7.680
.41	5.962	−12.220	−7.131	0.099	5.172	8.117
.42	6.350	−12.572	−7.604	−0.093	5.340	8.579
.43	6.762	−12.933	−8.101	−0.303	5.509	9.066
.44	7.198	−13.305	−8.622	−0.532	5.680	9.581
.45	7.660	−13.686	−9.169	−0.782	5.852	10.124
.46	8.149	−14.077	−9.743	−1.053	6.025	10.698
.47	8.668	−14.477	−10.344	−1.347	6.198	11.303
.48	9.217	−14.889	−10.976	−1.665	6.371	11.941
.49	9.799	−15.310	−11.637	−2.010	6.544	12.614
.50	10.415	−15.741	−12.331	−2.382	6.715	13.324

Z	J 6, 1	J 6, 2	J 6, 3	J 6, 4	J 6, 5	J 6, 6
.51	11.068	−16.183	−13.058	−2.783	6.884	14.073
.52	11.759	−16.635	−13.821	−3.216	7.051	14.862
.53	12.490	−17.097	−14.619	−3.683	7.215	15.693
.54	13.265	−17.569	−15.456	−4.184	7.374	16.570
.55	14.085	−18.051	−16.333	−4.723	7.529	17.493
.56	14.953	−18.543	−17.252	−5.302	7.677	18.466
.57	15.872	−19.044	−18.214	−5.923	7.819	19.491
.58	16.844	−19.555	−19.221	−6.589	7.952	20.570
.59	17.872	−20.075	−20.276	−7.302	8.076	21.706
.60	18.960	−20.605	−21.379	−8.066	8.189	22.902
.61	20.110	−21.142	−22.535	−8.883	8.290	24.161
.62	21.327	−21.688	−23.744	−9.757	8.377	25.486
.63	22.613	−22.242	−25.008	−10.690	8.448	26.880
.64	23.973	−22.803	−26.331	−11.687	8.502	28.346
.65	25.410	−23.371	−27.714	−12.751	8.537	29.889
.66	26.929	−23.945	−29.161	−13.886	8.550	31.512
.67	28.535	−24.524	−30.673	−15.095	8.540	33.218
.68	30.230	−25.108	−32.254	−16.384	8.503	35.012
.69	32.021	−25.695	−33.905	−17.756	8.438	36.897
.70	33.913	−26.285	−35.631	−19.217	8.341	38.879
.71	35.910	−26.877	−37.433	−20.772	8.209	40.962
.72	38.019	−27.469	−39.315	−22.424	8.039	43.151
.73	40.245	−28.061	−41.280	−24.181	7.828	45.450
.74	42.593	−28.650	−43.332	−26.048	7.572	47.865
.75	45.071	−29.236	−45.473	−28.030	7.267	50.401
.76	47.685	−29.817	−47.707	−30.135	6.909	53.065
.77	50.442	−30.391	−50.038	−32.368	6.493	55.861
.78	53.350	−30.956	−52.468	−34.736	6.014	58.796
.79	56.415	−31.510	−55.003	−37.247	5.468	61.877
.80	59.646	−32.051	−57.645	−39.909	4.849	65.110
.81	63.050	−32.577	−60.399	−42.728	4.151	68.503
.82	66.638	−33.085	−63.268	−45.715	3.368	72.062
.83	70.418	−33.573	−66.258	−48.876	2.494	75.795
.84	74.398	−34.037	−69.371	−52.222	1.522	79.710
.85	78.590	−34.474	−72.614	−55.761	0.444	83.816
.86	83.003	−34.882	−75.989	−59.504	−0.748	88.120
.87	87.648	−35.257	−79.502	−63.461	−2.062	92.632
.88	92.537	−35.594	−83.157	−67.643	−3.506	97.362
.89	97.681	−35.890	−86.959	−72.061	−5.090	102.318
.90	103.092	−36.141	−90.914	−76.726	−6.823	107.511
.91	108.784	−36.341	−95.025	−81.652	−8.717	112.952
.92	114.768	−36.487	−99.299	−86.851	−10.781	118.650
.93	121.060	−36.574	−103.741	−92.336	−13.028	124.619
.94	127.674	−36.594	−108.356	−98.121	−15.471	130.869
.95	134.625	−36.544	−113.150	−104.222	−18.121	137.412
.96	141.927	−36.417	−118.128	−110.652	−20.993	144.263
.97	149.599	−36.206	−123.296	−117.428	−24.101	151.432
.98	157.656	−35.904	−128.660	−124.567	−27.461	158.935
.99	166.117	−35.505	−134.226	−132.085	−31.088	166.786

Z	J 7, 1	J 7, 2	J 7, 3	J 7, 4	J 7, 5	J 7, 6	J 7, 7
.01	0.051	−5.132	0.918	1.039	1.041	1.041	1.041
.02	0.105	−5.269	0.831	1.077	1.085	1.085	1.085
.03	0.162	−5.410	0.740	1.114	1.131	1.132	1.132
.04	0.221	−5.555	0.644	1.149	1.179	1.181	1.181
.05	0.284	−5.706	0.542	1.182	1.230	1.234	1.234
.06	0.350	−5.862	0.435	1.213	1.284	1.290	1.290
.07	0.420	−6.023	0.322	1.242	1.340	1.349	1.350
.08	0.493	−6.190	0.203	1.269	1.398	1.412	1.414
.09	0.571	−6.362	0.078	1.293	1.459	1.480	1.482
.10	0.653	−6.541	−0.055	1.314	1.523	1.551	1.555
.11	0.740	−6.725	−0.195	1.332	1.589	1.627	1.632
.12	0.832	−6.917	−0.343	1.347	1.657	1.708	1.715
.13	0.930	−7.115	−0.499	1.358	1.728	1.793	1.804
.14	1.033	−7.319	−0.663	1.364	1.802	1.884	1.899
.15	1.143	−7.532	−0.837	1.367	1.877	1.981	2.000
.16	1.259	−7.751	−1.020	1.365	1.955	2.083	2.109
.17	1.383	−7.979	−1.214	1.357	2.035	2.192	2.225
.18	1.514	−8.214	−1.418	1.344	2.118	2.307	2.350
.19	1.653	−8.458	−1.634	1.324	2.202	2.429	2.483
.20	1.802	−8.711	−1.862	1.298	2.288	2.558	2.626
.21	1.959	−8.973	−2.103	1.265	2.377	2.695	2.780
.22	2.127	−9.244	−2.357	1.224	2.466	2.840	2.944
.23	2.306	−9.525	−2.625	1.175	2.558	2.993	3.120
.24	2.496	−9.817	−2.909	1.116	2.650	3.155	3.308
.25	2.699	−10.118	−3.208	1.048	2.744	3.326	3.511
.26	2.915	−10.431	−3.525	0.968	2.838	3.506	3.728
.27	3.145	−10.754	−3.859	0.878	2.933	3.697	3.960
.28	3.391	−11.089	−4.212	0.774	3.028	3.899	4.210
.29	3.653	−11.436	−4.585	0.658	3.122	4.111	4.477
.30	3.933	−11.796	−4.979	0.527	3.217	4.335	4.764
.31	4.231	−12.168	−5.395	0.380	3.310	4.571	5.072
.32	4.550	−12.554	−5.835	0.216	3.401	4.820	5.402
.33	4.890	−12.953	−6.300	0.034	3.490	5.082	5.755
.34	5.254	−13.365	−6.790	−0.167	3.577	5.357	6.135
.35	5.643	−13.793	−7.309	−0.389	3.660	5.647	6.542
.36	6.058	−14.235	−7.857	−0.635	3.739	5.951	6.978
.37	6.503	−14.692	−8.436	−0.904	3.812	6.271	7.446
.38	6.978	−15.164	−9.047	−1.200	3.880	6.607	7.947
.39	7.486	−15.653	−9.693	−1.525	3.940	6.960	8.485
.40	8.029	−16.158	−10.375	−1.879	3.992	7.330	9.061
.41	8.611	−16.679	−11.096	−2.267	4.035	7.718	9.679
.42	9.233	−17.218	−11.858	−2.689	4.067	8.124	10.341
.43	9.899	−17.773	−12.662	−3.150	4.086	8.550	11.051
.44	10.612	−18.347	−13.512	−3.651	4.091	8.995	11.811
.45	11.375	−18.938	−14.409	−4.195	4.080	9.460	12.626
.46	12.193	−19.546	−15.357	−4.786	4.052	9.946	13.499
.47	13.068	−20.174	−16.358	−5.428	4.003	10.454	14.435
.48	14.005	−20.819	−17.415	−6.124	3.932	10.984	15.437
.49	15.009	−21.483	−18.531	−6.877	3.836	11.536	16.510
.50	16.085	−22.165	−19.710	−7.692	3.712	12.111	17.659

z	J 7, 1	J 7, 2	J 7, 3	J 7, 4	J 7, 5	J 7, 6	J 7, 7
.51	17.237	−22.865	−20.954	−8.574	3.556	12.709	18.890
.52	18.472	−23.584	−22.268	−9.527	3.367	13.332	20.209
.53	19.794	−24.320	−23.654	−10.557	3.139	13.978	21.620
.54	21.212	−25.074	−25.118	−11.669	2.869	14.649	23.131
.55	22.730	−25.845	−26.663	−12.868	2.553	15.344	24.748
.56	24.357	−26.632	−28.292	−14.161	2.186	16.063	26.480
.57	26.101	−27.435	−30.012	−15.555	1.762	16.807	28.332
.58	27.969	−28.253	−31.826	−17.057	1.277	17.576	30.315
.59	29.971	−29.085	−33.739	−18.674	0.723	18.368	32.436
.60	32.117	−29.929	−35.757	−20.414	0.095	19.184	34.706
.61	34.415	−30.785	−37.885	−22.287	−0.614	20.022	37.134
.62	36.879	−31.650	−40.128	−24.300	−1.413	20.882	39.730
.63	39.518	−32.522	−42.493	−26.464	−2.309	21.763	42.507
.64	42.346	−33.400	−44.985	−28.789	−3.313	22.663	45.477
.65	45.375	−34.280	−47.611	−31.286	−4.432	23.581	48.653
.66	48.621	−35.161	−50.377	−33.967	−5.679	24.515	52.047
.67	52.098	−36.038	−53.290	−36.845	−7.063	25.462	55.676
.68	55.823	−36.908	−56.358	−39.932	−8.599	26.419	59.555
.69	59.812	−37.767	−59.588	−43.243	−10.298	27.384	63.700
.70	64.085	−38.612	−62.987	−46.793	−12.176	28.353	68.130
.71	68.660	−39.436	−66.565	−50.597	−14.247	29.321	72.863
.72	73.559	−40.234	−70.328	−54.672	−16.528	30.284	77.919
.73	78.805	−41.000	−74.285	−59.037	−19.038	31.236	83.320
.74	84.421	−41.728	−78.447	−63.711	−21.795	32.171	89.088
.75	90.433	−42.410	−82.821	−68.713	−24.820	33.083	95.248
.76	96.867	−43.037	−87.417	−74.065	−28.136	33.963	101.826
.77	103.752	−43.602	−92.245	−79.789	−31.767	34.803	108.848
.78	111.120	−44.094	−97.316	−85.910	−35.737	35.593	116.344
.79	119.003	−44.502	−102.639	−92.454	−40.076	36.323	124.345
.80	127.436	−44.814	−108.226	−99.446	−44.813	36.980	132.884
.81	136.455	−45.019	−114.088	−106.915	−49.979	37.551	141.995
.82	146.100	−45.101	−120.235	−114.892	−55.609	38.022	151.715
.83	156.413	−45.045	−126.680	−123.409	−61.740	38.376	162.085
.84	167.439	−44.836	−133.434	−132.498	−68.411	38.595	173.145
.85	179.224	−44.454	−140.509	−142.196	−75.664	38.660	184.940
.86	191.819	−43.881	−147.919	−152.541	−83.544	38.548	197.518
.87	205.277	−43.094	−155.674	−163.571	−92.100	38.237	210.927
.88	219.655	−42.072	−163.789	−175.330	−101.384	37.699	225.221
.89	235.014	−40.789	−172.276	−187.861	−111.450	36.907	240.456
.90	251.416	−39.218	−181.149	−201.210	−122.357	35.828	256.691
.91	268.930	−37.331	−190.420	−215.428	−134.170	34.429	273.990
.92	287.627	−35.095	−200.103	−230.566	−146.955	32.672	292.419
.93	307.585	−32.477	−210.211	−246.679	−160.785	30.517	312.050
.94	328.883	−29.440	−220.758	−263.824	−175.737	27.919	332.957
.95	351.607	−25.945	−231.758	−282.061	−191.892	24.829	355.220
.96	375.849	−21.950	−243.223	−301.456	−209.339	21.195	378.923
.97	401.704	−17.408	−255.167	−322.075	−228.170	16.960	404.156
.98	429.275	−12.272	−267.602	−343.988	−248.485	12.061	431.012
.99	458.668	−6.488	−280.542	−367.270	−270.391	6.432	459.591

Z	J 8, 1	J 8, 2	J 8, 3	J 8, 4	J 8, 5	J 8, 6	J 8, 7	J 8, 8
.01	0.062	−6.163	0.897	1.039	1.041	1.041	1.041	1.041
.02	0.126	−6.331	0.789	1.076	1.085	1.085	1.085	1.085
.03	0.195	−6.505	0.674	1.111	1.131	1.132	1.132	1.132
.04	0.266	−6.686	0.553	1.144	1.179	1.181	1.181	1.181
.05	0.342	−6.873	0.425	1.173	1.230	1.234	1.234	1.234
.06	0.423	−7.066	0.290	1.200	1.283	1.290	1.290	1.290
.07	0.507	−7.266	0.148	1.224	1.338	1.349	1.350	1.350
.08	0.597	−7.474	−0.003	1.244	1.396	1.412	1.414	1.414
.09	0.692	−7.689	−0.162	1.260	1.456	1.479	1.482	1.482
.10	0.793	−7.912	−0.331	1.273	1.517	1.550	1.555	1.555
.11	0.900	−8.144	−0.509	1.280	1.581	1.626	1.632	1.633
.12	1.013	−8.384	−0.697	1.283	1.647	1.706	1.715	1.716
.13	1.134	−8.633	−0.897	1.280	1.715	1.791	1.804	1.806
.14	1.262	−8.891	−1.108	1.271	1.784	1.881	1.898	1.901
.15	1.398	−9.159	−1.331	1.255	1.855	1.977	2.000	2.004
.16	1.543	−9.437	−1.567	1.233	1.927	2.078	2.108	2.114
.17	1.698	−9.726	−1.817	1.203	2.001	2.185	2.224	2.232
.18	1.863	−10.026	−2.081	1.164	2.075	2.298	2.348	2.359
.19	2.038	−10.337	−2.361	1.116	2.150	2.417	2.481	2.496
.20	2.225	−10.660	−2.658	1.059	2.225	2.543	2.623	2.643
.21	2.425	−10.996	−2.972	0.990	2.300	2.676	2.776	2.801
.22	2.639	−11.345	−3.305	0.910	2.375	2.816	2.939	2.972
.23	2.867	−11.707	−3.657	0.817	2.449	2.963	3.113	3.155
.24	3.111	−12.084	−4.031	0.710	2.522	3.118	3.300	3.353
.25	3.372	−12.475	−4.426	0.588	2.593	3.281	3.500	3.567
.26	3.651	−12.881	−4.846	0.450	2.661	3.452	3.715	3.797
.27	3.950	−13.303	−5.290	0.295	2.726	3.632	3.944	4.047
.28	4.271	−13.742	−5.762	0.120	2.788	3.820	4.190	4.316
.29	4.614	−14.198	−6.261	−0.076	2.844	4.018	4.453	4.606
.30	4.982	−14.672	−6.791	−0.294	2.895	4.224	4.734	4.921
.31	5.378	−15.164	−7.353	−0.536	2.940	4.440	5.035	5.261
.32	5.802	−15.675	−7.949	−0.805	2.976	4.664	5.358	5.629
.33	6.257	−16.206	−8.581	−1.102	3.004	4.899	5.703	6.027
.34	6.747	−16.758	−9.252	−1.430	3.021	5.143	6.072	6.458
.35	7.273	−17.331	−9.963	−1.792	3.025	5.397	6.466	6.925
.36	7.839	−17.925	−10.718	−2.190	3.016	5.660	6.888	7.430
.37	8.447	−18.543	−11.519	−2.627	2.992	5.932	7.339	7.978
.38	9.102	−19.183	−12.369	−3.106	2.950	6.215	7.821	8.571
.39	9.807	−19.848	−13.272	−3.632	2.887	6.506	8.337	9.214
.40	10.567	−20.537	−14.229	−4.207	2.802	6.806	8.887	9.912
.41	11.385	−21.251	−15.246	−4.835	2.692	7.114	9.475	10.668
.42	12.267	−21.992	−16.325	−5.522	2.553	7.430	10.103	11.487
.43	13.218	−22.759	−17.471	−6.272	2.382	7.753	10.773	12.376
.44	14.244	−23.552	−18.688	−7.089	2.175	8.083	11.487	13.340
.45	15.351	−24.373	−19.979	−7.980	1.929	8.417	12.250	14.386
.46	16.546	−25.222	−21.350	−8.951	1.638	8.756	13.063	15.520
.47	17.836	−26.099	−22.807	−10.007	1.298	9.097	13.930	16.751
.48	19.230	−27.003	−24.353	−11.156	0.903	9.438	14.854	18.087
.49	20.736	−27.936	−25.994	−12.404	0.447	9.779	15.838	19.536
.50	22.363	−28.898	−27.737	−13.762	−0.076	10.115	16.886	21.108

Z	J 8, 1	J 8, 2	J 8, 3	J 8, 4	J 8, 5	J 8, 6	J 8, 7	J 8, 8
.51	24.123	−29.886	−29.588	−15.236	−0.674	10.446	18.001	22.814
.52	26.025	−30.903	−31.553	−16.836	−1.354	10.767	19.187	24.666
.53	28.083	−31.945	−33.639	−18.572	−2.126	11.075	20.448	26.676
.54	30.310	−33.014	−35.854	−20.456	−2.998	11.366	21.789	28.857
.55	32.720	−34.107	−38.205	−22.499	−3.982	11.635	23.213	31.225
.56	35.329	−35.222	−40.701	−24.713	−5.088	11.878	24.725	33.794
.57	38.153	−36.359	−43.351	−27.113	−6.330	12.087	26.330	36.583
.58	41.212	−37.513	−46.162	−29.712	−7.720	12.256	28.031	39.610
.59	44.524	−38.684	−49.146	−32.527	−9.275	12.378	29.834	42.895
.60	48.114	−39.866	−52.312	−35.575	−11.009	12.444	31.744	46.461
.61	52.003	−41.056	−55.671	−38.873	−12.942	12.444	33.765	50.331
.62	56.217	−42.250	−59.233	−42.442	−15.092	12.367	35.903	54.532
.63	60.785	−43.442	−63.012	−46.303	−17.482	12.201	38.161	59.091
.64	65.737	−44.625	−67.018	−50.478	−20.134	11.932	40.546	64.039
.65	71.105	−45.792	−71.265	−54.992	−23.073	11.545	43.063	69.410
.66	76.926	−46.935	−75.767	−59.871	−26.329	11.022	45.714	75.238
.67	83.238	−48.044	−80.536	−65.143	−29.930	10.345	48.506	81.563
.68	90.083	−49.109	−85.589	−70.839	−33.910	9.492	51.443	88.428
.69	97.508	−50.117	−90.939	−76.990	−38.305	8.439	54.528	95.876
.70	105.560	−51.054	−96.604	−83.633	−43.154	7.160	57.766	103.959
.71	114.295	−51.904	−102.599	−90.804	−48.500	5.625	61.158	112.730
.72	123.769	−52.651	−108.941	−98.543	−54.390	3.802	64.708	122.246
.73	134.047	−53.273	−115.649	−106.894	−60.873	1.654	68.417	132.571
.74	145.196	−53.749	−122.740	−115.902	−68.004	−0.859	72.286	143.773
.75	157.291	−54.055	−130.232	−125.617	−75.845	−3.782	76.315	155.926
.76	170.411	−54.161	−138.146	−136.092	−84.459	−7.164	80.502	169.108
.77	184.644	−54.037	−146.501	−147.382	−93.917	−11.059	84.844	183.408
.78	200.083	−53.648	−155.317	−159.549	−104.296	−15.527	89.337	198.918
.79	216.831	−52.957	−164.614	−172.657	−115.680	−20.636	93.973	215.739
.80	234.997	−51.920	−174.413	−186.774	−128.157	−26.459	98.744	233.982
.81	254.701	−50.490	−184.735	−201.976	−141.828	−33.076	103.639	253.764
.82	276.071	−48.615	−195.601	−218.339	−156.796	−40.577	108.642	275.215
.83	299.248	−46.237	−207.033	−235.949	−173.179	−49.059	113.737	298.472
.84	324.381	−43.291	−219.050	−254.895	−191.100	−58.632	118.901	323.686
.85	351.633	−39.707	−231.673	−275.272	−210.695	−69.413	124.108	351.019
.86	381.181	−35.407	−244.923	−297.182	−232.109	−81.534	129.328	380.645
.87	413.216	−30.304	−258.818	−320.733	−255.502	−95.137	134.524	412.755
.88	447.941	−24.304	−273.378	−346.040	−281.044	−110.381	139.654	447.553
.89	485.580	−17.303	−288.619	−373.227	−308.921	−127.437	144.667	485.259
.90	526.372	−9.186	−304.558	−402.423	−339.331	−146.494	149.508	526.114
.91	570.575	0.172	−321.208	−433.768	−372.493	−167.761	154.109	570.373
.92	618.468	10.910	−338.581	−467.407	−408.638	−191.463	158.394	618.317
.93	670.353	23.179	−356.688	−503.498	−448.018	−217.850	162.278	670.244
.94	726.553	37.144	−375.534	−542.205	−490.906	−247.193	165.661	726.480
.95	787.419	52.987	−395.122	−583.705	−537.594	−279.788	168.430	787.374
.96	853.328	70.907	−415.453	−628.184	−588.400	−315.960	170.459	853.303
.97	924.685	91.120	−436.519	−675.838	−643.661	−356.063	171.603	924.674
.98	1001.929	113.863	−458.312	−726.877	−703.747	−400.483	171.700	1001.926
.99	1085.531	139.396	−480.813	−781.519	−769.051	−449.642	170.568	1085.530

z	J 9, 1	J 9, 2	J 9, 3	J 9, 4	J 9, 5	J 9, 6	J 9, 7	J 9, 8	J 9, 9
.01	0.072	−7.193	0.877	1.039	1.041	1.041	1.041	1.041	1.041
.02	0.148	−7.394	0.746	1.075	1.085	1.085	1.085	1.085	1.085
.03	0.227	−7.601	0.608	1.108	1.131	1.132	1.132	1.132	1.132
.04	0.312	−7.816	0.463	1.138	1.179	1.181	1.181	1.181	1.181
.05	0.401	−8.039	0.309	1.165	1.229	1.234	1.234	1.234	1.234
.06	0.495	−8.270	0.146	1.187	1.282	1.289	1.290	1.290	1.290
.07	0.595	−8.510	−0.027	1.206	1.337	1.349	1.350	1.350	1.350
.08	0.701	−8.758	−0.209	1.219	1.393	1.412	1.414	1.414	1.414
.09	0.814	−9.016	−0.402	1.228	1.452	1.479	1.482	1.482	1.482
.10	0.933	−9.284	−0.606	1.231	1.512	1.550	1.554	1.555	1.555
.11	1.060	−9.562	−0.823	1.228	1.574	1.625	1.632	1.633	1.633
.12	1.195	−9.851	−1.052	1.219	1.637	1.705	1.715	1.716	1.717
.13	1.338	−10.151	−1.295	1.202	1.701	1.789	1.803	1.806	1.806
.14	1.491	−10.462	−1.552	1.177	1.767	1.878	1.898	1.901	1.902
.15	1.654	−10.786	−1.825	1.144	1.833	1.973	1.999	2.004	2.005
.16	1.828	−11.123	−2.113	1.101	1.899	2.072	2.107	2.114	2.115
.17	2.013	−11.473	−2.420	1.048	1.966	2.177	2.223	2.232	2.234
.18	2.211	−11.837	−2.745	0.984	2.032	2.288	2.346	2.359	2.362
.19	2.423	−12.216	−3.089	0.908	2.097	2.404	2.478	2.495	2.499
.20	2.649	−12.610	−3.454	0.818	2.161	2.527	2.620	2.642	2.647
.21	2.891	−13.020	−3.842	0.714	2.223	2.656	2.771	2.800	2.807
.22	3.151	−13.446	−4.254	0.594	2.282	2.790	2.932	2.970	2.980
.23	3.428	−13.890	−4.691	0.457	2.339	2.932	3.105	3.153	3.166
.24	3.726	−14.352	−5.155	0.302	2.391	3.079	3.290	3.351	3.368
.25	4.046	−14.834	−5.647	0.126	2.438	3.234	3.487	3.564	3.586
.26	4.389	−15.335	−6.171	−0.072	2.480	3.395	3.698	3.793	3.823
.27	4.757	−15.856	−6.727	−0.294	2.514	3.562	3.923	4.041	4.079
.28	5.153	−16.400	−7.317	−0.542	2.541	3.736	4.163	4.309	4.357
.29	5.578	−16.966	−7.945	−0.818	2.558	3.916	4.420	4.598	4.659
.30	6.036	−17.555	−8.613	−1.125	2.563	4.102	4.694	4.910	4.987
.31	6.530	−18.169	−9.323	−1.465	2.556	4.295	4.986	5.247	5.343
.32	7.061	−18.808	−10.078	−1.842	2.535	4.493	5.297	5.612	5.731
.33	7.634	−19.473	−10.882	−2.259	2.496	4.696	5.629	6.006	6.153
.34	8.252	−20.167	−11.736	−2.719	2.439	4.903	5.983	6.432	6.613
.35	8.918	−20.888	−12.646	−3.225	2.360	5.115	6.359	6.893	7.114
.36	9.638	−21.639	−13.614	−3.783	2.256	5.330	6.760	7.392	7.661
.37	10.416	−22.421	−14.645	−4.396	2.125	5.547	7.186	7.931	8.258
.38	11.258	−23.235	−15.743	−5.068	1.962	5.765	7.639	8.514	8.909
.39	12.168	−24.082	−16.912	−5.807	1.765	5.982	8.120	9.145	9.621
.40	13.152	−24.962	−18.158	−6.616	1.529	6.198	8.630	9.828	10.398
.41	14.219	−25.877	−19.484	−7.502	1.248	6.409	9.171	10.567	11.249
.42	15.375	−26.828	−20.898	−8.473	0.918	6.615	9.744	11.367	12.179
.43	16.629	−27.815	−22.405	−9.535	0.534	6.812	10.351	12.233	13.197
.44	17.988	−28.840	−24.011	−10.695	0.087	6.998	10.992	13.169	14.311
.45	19.464	−29.903	−25.723	−11.964	−0.428	7.169	11.670	14.182	15.532
.46	21.068	−31.004	−27.548	−13.350	−1.019	7.321	12.385	15.278	16.869
.47	22.809	−32.145	−29.494	−14.863	−1.696	7.450	13.138	16.465	18.335
.48	24.703	−33.324	−31.569	−16.515	−2.467	7.551	13.931	17.748	19.942
.49	26.764	−34.543	−33.782	−18.317	−3.343	7.618	14.764	19.136	21.704
.50	29.006	−35.801	−36.143	−20.282	−4.337	7.644	15.638	20.637	23.638

z	J 9, 1	J 9, 2	J 9, 3	J 9, 4	J 9, 5	J 9, 6	J 9, 7	J 9, 8	J 9, 9
.51	31.448	−37.098	−38.660	−22.426	−5.460	7.622	16.554	22.261	25.759
.52	34.108	−38.431	−41.346	−24.763	−6.728	7.544	17.511	24.017	28.088
.53	37.007	−39.801	−44.210	−27.309	−8.155	7.400	18.509	25.915	30.644
.54	40.170	−41.204	−47.266	−30.084	−9.760	7.180	19.548	27.966	33.451
.55	43.620	−42.639	−50.525	−33.107	−11.562	6.870	20.626	30.183	36.535
.56	47.385	−44.102	−54.002	−36.400	−13.581	6.457	21.742	32.579	39.922
.57	51.498	−45.589	−57.711	−39.986	−15.841	5.925	22.894	35.166	43.644
.58	55.991	−47.095	−61.666	−43.890	−18.368	5.257	24.077	37.960	47.734
.59	60.901	−48.614	−65.884	−48.140	−21.191	4.433	25.288	40.977	52.230
.60	66.270	−50.139	−70.382	−52.766	−24.340	3.430	26.521	44.232	57.173
.61	72.143	−51.661	−75.178	−57.801	−27.850	2.224	27.769	47.744	62.608
.62	78.570	−53.170	−80.290	−63.279	−31.759	0.786	29.025	51.532	68.585
.63	85.605	−54.654	−85.739	−69.238	−36.110	−0.916	30.278	55.615	75.159
.64	93.309	−56.098	−91.546	−75.722	−40.947	−2.918	31.517	60.015	82.390
.65	101.747	−57.487	−97.732	−82.773	−46.323	−5.258	32.726	64.755	90.345
.66	110.995	−58.802	−104.320	−90.441	−52.293	−7.983	33.888	69.858	99.098
.67	121.131	−60.019	−111.334	−98.779	−58.918	−11.142	34.985	75.348	108.729
.68	132.244	−61.115	−118.800	−107.843	−66.268	−14.791	35.991	81.254	119.328
.69	144.432	−62.059	−126.743	−117.696	−74.415	−18.994	36.880	87.601	130.994
.70	157.804	−62.819	−135.190	−128.404	−83.442	−23.820	37.619	94.419	143.834
.71	172.476	−63.356	−144.169	−140.040	−93.440	−29.348	38.170	101.738	157.968
.72	188.580	−63.626	−153.707	−152.682	−104.507	−35.666	38.491	109.589	173.528
.73	206.258	−63.579	−163.836	−166.414	−116.752	−42.871	38.530	118.004	190.659
.74	225.669	−63.159	−174.583	−181.328	−130.295	−51.073	38.231	127.017	209.519
.75	246.987	−62.300	−185.979	−197.522	−145.267	−60.393	37.526	136.662	230.287
.76	270.403	−60.931	−198.054	−215.102	−161.813	−70.967	36.339	146.972	253.154
.77	296.126	−58.968	−210.838	−234.183	−180.091	−82.947	34.583	157.983	278.335
.78	324.390	−56.317	−224.362	−254.889	−200.273	−96.500	32.158	169.729	306.064
.79	355.447	−52.874	−238.653	−277.352	−222.551	−111.814	28.950	182.245	336.602
.80	389.579	−48.518	−253.741	−301.716	−247.133	−129.097	24.828	195.565	370.232
.81	427.092	−43.115	−269.650	−328.134	−274.247	−148.581	19.645	209.720	407.270
.82	468.327	−36.515	−286.406	−356.772	−304.144	−170.522	13.232	224.741	448.060
.83	513.654	−28.547	−304.029	−387.807	−337.098	−195.208	5.398	240.654	492.983
.84	563.483	−19.021	−322.537	−421.430	−373.408	−222.954	−4.074	257.484	542.458
.85	618.262	−7.723	−341.944	−457.846	−413.403	−254.113	−15.428	275.248	596.947
.86	678.486	5.587	−362.257	−497.272	−457.441	−289.075	−28.943	293.959	656.957
.87	744.696	21.177	−383.477	−539.944	−505.915	−328.273	−44.933	313.622	723.046
.88	817.488	39.348	−405.598	−586.113	−559.251	−372.185	−63.750	334.232	795.828
.89	897.516	60.435	−428.605	−636.045	−617.919	−421.343	−85.794	355.775	875.979
.90	985.495	84.814	−452.469	−690.026	−682.429	−476.333	−111.515	378.221	964.242
.91	1082.215	112.901	−477.153	−748.361	−753.337	−537.806	−141.419	401.525	1061.434
.92	1188.537	145.164	−502.600	−811.374	−831.251	−606.479	−176.074	425.624	1168.454
.93	1305.410	182.122	−528.740	−879.411	−916.834	−683.147	−216.121	450.432	1286.288
.94	1433.871	224.353	−555.480	−952.836	−1010.806	−768.685	−262.276	475.836	1416.023
.95	1575.059	272.502	−582.705	−1032.040	−1113.953	−864.062	−315.344	501.694	1558.849
.96	1730.222	327.283	−610.274	−1117.434	−1227.130	−970.347	−376.228	527.829	1716.079
.97	1900.728	389.492	−638.014	−1209.454	−1351.267	−1088.717	−445.938	554.021	1889.150
.98	2088.073	460.010	−665.720	−1308.560	−1487.376	−1220.471	−525.602	580.004	2079.642
.99	2293.897	539.817	−693.145	−1415.238	−1636.554	−1367.039	−616.485	605.458	2289.289

z	J 10, 1	J 10, 2	J 10, 3	J 10, 4	J 10, 5	J 10, 6	J 10, 7	J 10, 8	J 10, 9
.01	0.082	−8.224	0.856	1.038	1.041	1.041	1.041	1.041	1.041
.02	0.169	−8.456	0.704	1.074	1.085	1.085	1.085	1.085	1.085
.03	0.260	−8.697	0.543	1.105	1.131	1.132	1.132	1.132	1.132
.04	0.357	−8.946	0.372	1.133	1.179	1.181	1.181	1.181	1.181
.05	0.460	−9.205	0.192	1.156	1.229	1.234	1.234	1.234	1.234
.06	0.568	−9.474	0.001	1.174	1.281	1.289	1.290	1.290	1.290
.07	0.683	−9.753	−0.201	1.187	1.335	1.349	1.350	1.350	1.350
.08	0.805	−10.042	−0.415	1.195	1.391	1.412	1.414	1.414	1.414
.09	0.935	−10.343	−0.642	1.196	1.448	1.478	1.482	1.482	1.482
.10	1.073	−10.656	−0.882	1.190	1.506	1.549	1.554	1.555	1.555
.11	1.220	−10.980	−1.137	1.176	1.566	1.624	1.632	1.633	1.633
.12	1.376	−11.318	−1.407	1.155	1.627	1.703	1.715	1.716	1.717
.13	1.543	−11.669	−1.693	1.124	1.688	1.787	1.803	1.806	1.806
.14	1.720	−12.034	−1.997	1.084	1.749	1.875	1.897	1.901	1.902
.15	1.910	−12.414	−2.319	1.032	1.810	1.968	1.998	2.004	2.005
.16	2.112	−12.809	−2.660	0.969	1.871	2.067	2.106	2.114	2.115
.17	2.328	−13.220	−3.023	0.894	1.930	2.170	2.221	2.232	2.234
.18	2.560	−13.649	−3.408	0.804	1.988	2.278	2.344	2.359	2.362
.19	2.808	−14.095	−3.817	0.699	2.044	2.392	2.476	2.495	2.499
.20	3.073	−14.559	−4.251	0.577	2.096	2.511	2.616	2.641	2.647
.21	3.357	−15.044	−4.713	0.438	2.145	2.635	2.766	2.799	2.807
.22	3.662	−15.548	−5.203	0.278	2.189	2.765	2.926	2.969	2.980
.23	3.990	−16.074	−5.725	0.097	2.228	2.900	3.096	3.151	3.166
.24	4.342	−16.622	−6.279	−0.107	2.260	3.040	3.278	3.348	3.368
.25	4.720	−17.193	−6.869	−0.337	2.283	3.185	3.473	3.560	3.586
.26	5.126	−17.789	−7.496	−0.595	2.298	3.335	3.680	3.788	3.822
.27	5.564	−18.411	−8.164	−0.883	2.301	3.490	3.900	4.035	4.077
.28	6.036	−19.059	−8.875	−1.205	2.292	3.649	4.135	4.300	4.355
.29	6.544	−19.735	−9.632	−1.563	2.268	3.811	4.384	4.587	4.656
.30	7.092	−20.441	−10.439	−1.960	2.228	3.977	4.650	4.896	4.983
.31	7.684	−21.177	−11.298	−2.399	2.168	4.145	4.932	5.229	5.338
.32	8.323	−21.944	−12.213	−2.886	2.087	4.314	5.231	5.589	5.725
.33	9.014	−22.746	−13.190	−3.424	1.981	4.484	5.548	5.978	6.145
.34	9.761	−23.582	−14.230	−4.017	1.847	4.654	5.884	6.397	6.603
.35	10.570	−24.454	−15.341	−4.671	1.681	4.821	6.240	6.849	7.102
.36	11.446	−25.363	−16.525	−5.392	1.479	4.983	6.616	7.337	7.645
.37	12.396	−26.312	−17.790	−6.184	1.237	5.141	7.013	7.864	8.238
.38	13.426	−27.301	−19.139	−7.055	0.950	5.289	7.431	8.432	8.884
.39	14.545	−28.332	−20.580	−8.012	0.612	5.427	7.871	9 045	9.589
.40	15.760	−29.407	−22.120	−9.063	0.217	5.551	8.334	9.707	10.360
.41	17.081	−30.527	−23.764	−10.216	−0.243	5.657	8.819	10.420	11.201
.42	18.519	−31.692	−25.521	−11.480	−0.775	5.741	9.326	11.188	12.120
.43	20.084	−32.906	−27.400	−12.867	−1.387	5.799	9.856	12.017	13.125
.44	21.789	−34.168	−29.408	−14.386	−2.089	5.825	10.408	12.910	14.223
.45	23.648	−35.479	−31.555	−16.051	−2.891	5.813	10.982	13.871	15.425
.46	25.677	−36.841	−33.852	−17.874	−3.806	5.755	11.575	14.906	16.739
.47	27.893	−38.254	−36.309	−19.870	−4.846	5.645	12.187	16.020	18.177
.48	30.314	−39.718	−38.939	−22.055	−6.026	5.471	12.816	17.218	19.751
.49	32.961	−41.233	−41.752	−24.447	−7.363	5.225	13.458	18.505	21.474
.50	35.859	−42.799	−44.764	−27.064	−8.873	4.893	14.111	19.888	23.361

Z	J 10, 1	J 10, 2	J 10, 3	J 10, 4	J 10, 5	J 10, 6	J 10, 7	J 10, 8	J 10, 9
.51	39.032	−44.415	−47.988	−29.928	−10.577	4.463	14.771	21.373	25.426
.52	42.509	−46.079	−51.440	−33.061	−12.498	3.919	15.432	22.966	27.688
.53	46.323	−47.788	−55.136	−36.488	−14.658	3.243	16.087	24.673	30.166
.54	50.509	−49.539	−59.093	−40.238	−17.087	2.416	16.730	26.501	32.880
.55	55.106	−51.328	−63.331	−44.338	−19.815	1.416	17.351	28.457	35.853
.56	60.158	−53.150	−67.870	−48.823	−22.874	0.215	17.938	30.547	39.111
.57	65.715	−54.997	−72.731	−53.728	−26.303	−1.213	18.480	32.777	42.679
.58	71.829	−56.861	−77.936	−59.092	−30.143	−2.902	18.960	35.155	46.588
.59	78.563	−58.730	−83.510	−64.958	−34.441	−4.889	19.360	37.686	50.870
.60	85.983	−60.594	−89.478	−71.373	−39.247	−7.215	19.659	40.376	55.562
.61	94.165	−62.434	−95.868	−78.387	−44.619	−9.927	19.832	43.229	60.701
.62	103.192	−64.234	−102.708	−86.057	−50.621	−13.080	19.849	46.250	66.329
.63	113.159	−65.971	−110.029	−94.444	−57.321	−16.732	19.676	49.441	72.494
.64	124.168	−67.619	−117.861	−103.614	−64.800	−20.952	19.274	52.803	79.245
.65	136.337	−69.147	−126.238	−113.641	−73.142	−25.817	18.596	56.337	86.636
.66	149.795	−70.518	−135.196	−124.603	−82.445	−31.412	17.588	60.038	94.727
.67	164.687	−71.691	−144.770	−136.587	−92.815	−37.836	16.189	63.901	103.583
.68	181.174	−72.615	−154.998	−149.688	−104.372	−45.197	14.326	67.916	113.274
.69	199.437	−73.232	−165.919	−164.009	−117.245	−53.620	11.918	72.069	123.874
.70	219.678	−73.476	−177.572	−179.663	−131.582	−63.244	8.868	76.341	135.467
.71	242.120	−73.267	−189.999	−196.771	−147.544	−74.227	5.068	80.707	148.142
.72	267.015	−72.515	−203.239	−215.467	−165.310	−86.744	0.390	85.133	161.994
.73	294.643	−71.117	−217.333	−235.896	−185.079	−100.994	−5.311	89.579	177.127
.74	325.317	−68.950	−232.323	−258.215	−207.072	−117.202	−12.200	93.990	193.652
.75	359.387	−65.876	−248.248	−282.596	−231.533	−135.618	−20.469	98.303	211.689
.76	397.244	−61.734	−265.145	−309.223	−258.732	−156.526	−30.336	102.437	231.367
.77	439.322	−56.342	−283.049	−338.298	−288.968	−180.242	−42.053	106.296	252.821
.78	486.109	−49.487	−301.991	−370.040	−322.574	−207.125	−55.904	109.763	276.199
.79	538.149	−40.928	−321.997	−404.684	−359.915	−237.574	−72.217	112.696	301.657
.80	596.049	−30.387	−343.087	−442.486	−401.397	−272.040	−91.365	114.926	329.360
.81	660.488	−17.549	−365.271	−483.721	−447.470	−311.027	−113.776	116.253	359.482
.82	732.221	−2.050	−388.550	−528.686	−498.627	−355.102	−139.933	116.438	392.207
.83	812.095	16.522	−412.913	−577.703	−555.417	−404.899	−170.391	115.199	427.727
.84	901.054	38.637	−438.330	−631.115	−618.445	−461.130	−205.781	112.204	466.244
.85	1000.151	64.834	−464.756	−689.293	−688.377	−524.591	−246.818	107.061	507.965
.86	1110.561	95.723	−492.119	−752.633	−765.949	−596.176	−294.319	99.312	553.104
.87	1233.598	131.998	−520.324	−821.562	−851.974	−676.884	−349.208	88.421	601.879
.88	1370.726	174.449	−549.238	−896.532	−947.345	−767.832	−412.539	73.761	654.511
.89	1523.578	223.973	−578.696	−978.029	−1053.048	−870.271	−485.504	54.602	711.218
.90	1693.976	281.587	−608.481	−1066.567	−1170.167	−985.598	−569.457	30.096	772.216
.91	1883.955	348.444	−638.327	−1162.693	−1299.895	−1115.375	−665.931	−0.745	837.710
.92	2095.779	425.851	−667.905	−1266.987	−1443.544	−1261.346	−776.664	−39.061	907.894
.93	2331.977	515.287	−696.811	−1380.059	−1602.556	−1425.459	−903.622	−86.175	982.939
.94	2595.366	618.426	−724.560	−1502.552	−1778.513	−1609.886	−1049.029	−143.616	1062.987
.95	2889.084	737.161	−750.567	−1635.139	−1973.152	−1817.051	−1215.401	−213.147	1148.145
.96	3216.633	873.630	−774.133	−1778.525	−2188.380	−2049.654	−1405.578	−296.801	1238.469
.97	3581.905	1030.245	−794.429	−1933.439	−2426.282	−2310.705	−1622.769	−396.918	1333.952
.98	3989.243	1209.732	−810.474	−2100.635	−2689.146	−2603.556	−1870.593	−516.188	1434.510
.99	4443.479	1415.162	−821.115	−2280.890	−2979.471	−2931.935	−2153.135	−657.700	1539.959

Z	J 10, 10
.01	1.041
.02	1.085
.03	1.132
.04	1.181
.05	1.234
.06	1.290
.07	1.350
.08	1.414
.09	1.482
.10	1.555
.11	1.633
.12	1.717
.13	1.806
.14	1.902
.15	2.005
.16	2.115
.17	2.234
.18	2.362
.19	2.500
.20	2.649
.21	2.809
.22	2.982
.23	3.170
.24	3.373
.25	3.593
.26	3.832
.27	4.091
.28	4.373
.29	4.679
.30	5.013
.31	5.377
.32	5.775
.33	6.209
.34	6.684
.35	7.204
.36	7.773
.37	8.397
.38	9.083
.39	9.835
.40	10.662
.41	11.572
.42	12.574
.43	13.678
.44	14.895
.45	16.238
.46	17.721
.47	19.358
.48	21.169
.49	23.172
.50	25.389

Z	J 10, 10
.51	27.843
.52	30.563
.53	33.577
.54	36.921
.55	40.630
.56	44.748
.57	49.321
.58	54.401
.59	60.048
.60	66.326
.61	73.310
.62	81.079
.63	89.727
.64	99.356
.65	110.079
.66	122.026
.67	135.340
.68	150.181
.69	166.728
.70	185.183
.71	205.770
.72	228.743
.73	254.382
.74	283.003
.75	314.960
.76	350.649
.77	390.513
.78	435.049
.79	484.813
.80	540.428
.81	602.591
.82	672.083
.83	749.780
.84	836.661
.85	933.824
.86	1042.496
.87	1164.055
.88	1300.040
.89	1452.176
.90	1622.395
.91	1812.857
.92	2025.983
.93	2264.480
.94	2531.378
.95	2830.066
.96	3164.340
.97	3538.438
.98	3957.106
.99	4425.647

z	J 11, 1	J 11, 2	J 11, 3	J 11, 4	J 11, 5	J 11, 6	J 11, 7	J 11, 8	J 11, 9
.01	0.092	−9.255	0.835	1.038	1.041	1.041	1.041	1.041	1.041
.02	0.190	−9.519	0.661	1.072	1.085	1.085	1.085	1.085	1.085
.03	0.293	−9.792	0.477	1.102	1.130	1.132	1.132	1.132	1.132
.04	0.403	−10.077	0.282	1.127	1.178	1.181	1.181	1.181	1.181
.05	0.518	−10.372	0.075	1.147	1.228	1.234	1.234	1.234	1.234
.06	0.641	−10.678	−0.144	1.161	1.280	1.289	1.290	1.290	1.290
.07	0.771	−10.996	−0.376	1.169	1.333	1.349	1.350	1.350	1.350
.08	0.909	−11.326	−0.621	1.170	1.388	1.411	1.414	1.414	1.414
.09	1.056	−11.670	−0.882	1.163	1.444	1.478	1.482	1.482	1.482
.10	1.213	−12.027	−1.158	1.148	1.501	1.548	1.554	1.555	1.555
.11	1.380	−12.399	−1.451	1.124	1.559	1.623	1.632	1.633	1.633
.12	1.557	−12.785	−1.761	1.091	1.616	1.702	1.714	1.716	1.717
.13	1.747	−13.187	−2.091	1.046	1.674	1.785	1.803	1.806	1.806
.14	1.949	−13.606	−2.441	0.990	1.732	1.872	1.897	1.901	1.902
.15	2.165	−14.041	−2.813	0.921	1.788	1.964	1.998	2.004	2.005
.16	2.396	−14.495	−3.207	0.837	1.843	2.061	2.105	2.114	2.115
.17	2.644	−14.968	−3.626	0.739	1.895	2.162	2.220	2.231	2.234
.18	2.909	−15.460	−4.072	0.624	1.945	2.268	2.342	2.358	2.362
.19	3.192	−15.974	−4.545	0.490	1.991	2.379	2.473	2.494	2.499
.20	3.497	−16.509	−5.048	0.337	2.032	2.495	2.612	2.640	2.647
.21	3.824	−17.067	−5.583	0.161	2.067	2.615	2.761	2.798	2.807
.22	4.174	−17.650	−6.153	−0.038	2.096	2.739	2.919	2.967	2.979
.23	4.552	−18.257	−6.759	−0.263	2.117	2.868	3.088	3.149	3.165
.24	4.957	−18.891	−7.404	−0.516	2.128	3.001	3.267	3.345	3.367
.25	5.394	−19.553	−8.091	−0.801	2.128	3.137	3.458	3.556	3.584
.26	5.864	−20.244	−8.823	−1.119	2.115	3.276	3.661	3.783	3.820
.27	6.372	−20.965	−9.602	−1.474	2.087	3.418	3.877	4.027	4.075
.28	6.919	−21.718	−10.434	−1.869	2.042	3.561	4.105	4.291	4.352
.29	7.510	−22.505	−11.320	−2.308	1.978	3.706	4.348	4.575	4.652
.30	8.148	−23.327	−12.265	−2.795	1.891	3.850	4.604	4.880	4.978
.31	8.838	−24.186	−13.274	−3.335	1.778	3.994	4.876	5.210	5.332
.32	9.585	−25.083	−14.351	−3.932	1.637	4.134	5.162	5.564	5.716
.33	10.395	−26.020	−15.500	−4.592	1.463	4.270	5.464	5.946	6.134
.34	11.272	−26.999	−16.728	−5.319	1.251	4.400	5.782	6.357	6.589
.35	12.223	−28.022	−18.040	−6.122	0.997	4.521	6.116	6.800	7.084
.36	13.257	−29.091	−19.442	−7.007	0.696	4.631	6.465	7.276	7.622
.37	14.379	−30.207	−20.941	−7.981	0.342	4.726	6.831	7.789	8.209
.38	15.600	−31.373	−22.545	−9.052	−0.073	4.803	7.212	8.339	8.848
.39	16.929	−32.591	−24.261	−10.231	−0.555	4.858	7.609	8.931	9.544
.40	18.377	−33.862	−26.097	−11.527	−1.113	4.887	8.020	9.567	10.303
.41	19.956	−35.188	−28.063	−12.951	−1.757	4.882	8.444	10.249	11.131
.42	21.678	−36.571	−30.168	−14.515	−2.496	4.839	8.881	10.981	12.033
.43	23.560	−38.013	−32.424	−16.233	−3.342	4.751	9.327	11.766	13.017
.44	25.617	−39.515	−34.842	−18.119	−4.308	4.608	9.780	12.606	14.091
.45	27.867	−41.079	−37.433	−20.190	−5.409	4.402	10.238	13.504	15.262
.46	30.332	−42.706	−40.212	−22.463	−6.661	4.121	10.697	14.465	16.540
.47	33.033	−44.396	−43.193	−24.957	−8.081	3.754	11.151	15.489	17.934
.48	35.997	−46.150	−46.390	−27.694	−9.690	3.286	11.595	16.582	19.455
.49	39.252	−47.968	−49.822	−30.698	−11.510	2.701	12.022	17.744	21.114
.50	42.829	−49.849	−53.506	−33.993	−13.567	1.982	12.424	18.979	22.923

Z	J 11, 1	J 11, 2	J 11, 3	J 11, 4	J 11, 5	J 11, 6	J 11, 7	J 11, 8	J 11, 9
.51	46.765	−51.792	−57.461	−37.610	−15.887	1.107	12.791	20.289	24.897
.52	51.098	−53.793	−61.709	−41.578	−18.503	0.053	13.111	21.674	27.049
.53	55.874	−55.850	−66.270	−45.933	−21.449	−1.208	13.370	23.137	29.395
.54	61.142	−57.957	−71.171	−50.712	−24.764	−2.705	13.552	24.677	31.951
.55	66.960	−60.109	−76.436	−55.957	−28.492	−4.474	13.636	26.293	34.736
.56	73.389	−62.296	−82.092	−61.713	−32.681	−6.555	13.601	27.983	37.769
.57	80.500	−64.508	−88.170	−68.032	−37.386	−8.993	13.419	29.743	41.071
.58	88.374	−66.732	−94.701	−74.968	−42.668	−11.838	13.058	31.567	44.662
.59	97.099	−68.952	−101.719	−82.582	−48.594	−15.150	12.483	33.448	48.567
.60	106.777	−71.146	−109.259	−90.942	−55.241	−18.994	11.650	35.374	52.811
.61	117.520	−73.291	−117.359	−100.121	−62.694	−23.446	10.509	37.330	57.417
.62	129.457	−75.356	−126.060	−110.202	−71.047	−28.592	9.002	39.298	62.415
.63	142.732	−77.306	−135.403	−121.272	−80.408	−34.528	7.061	41.255	67.831
.64	157.507	−79.098	−145.434	−133.430	−90.895	−41.366	4.609	43.169	73.695
.65	173.966	−80.680	−156.198	−146.784	−102.640	−49.229	1.553	45.004	80.036
.66	192.315	−81.991	−167.745	−161.453	−115.793	−58.262	−2.211	46.715	86.883
.67	212.788	−82.959	−180.125	−177.566	−130.519	−68.625	−6.807	48.246	94.266
.68	235.650	−83.499	−193.390	−195.266	−147.005	−80.502	−12.374	49.529	102.215
.69	261.199	−83.509	−207.592	−214.711	−165.459	−94.102	−19.078	50.481	110.755
.70	289.772	−82.870	−222.784	−236.070	−186.112	−109.660	−27.108	51.004	119.911
.71	321.751	−81.443	−239.021	−259.533	−209.224	−127.446	−36.681	50.980	129.705
.72	357.567	−79.062	−256.354	−285.304	−235.086	−147.763	−48.051	50.266	140.151
.73	397.710	−75.537	−274.832	−313.610	−264.021	−170.956	−61.508	48.693	151.260
.74	442.731	−70.642	−294.503	−344.695	−296.392	−197.418	−77.388	46.059	163.031
.75	493.258	−64.115	−315.409	−378.828	−332.603	−227.592	−96.078	42.124	175.452
.76	550.000	−55.648	−337.583	−416.300	−373.105	−261.982	−118.025	36.607	188.496
.77	613.759	−44.886	−361.050	−457.431	−418.404	−301.159	−143.740	29.170	202.118
.78	685.444	−31.413	−385.822	−502.565	−469.061	−345.769	−173.816	19.418	216.249
.79	766.088	−14.745	−411.896	−552.078	−525.703	−396.544	−208.932	6.886	230.790
.80	856.857	5.680	−439.247	−606.377	−589.031	−454.314	−249.870	−8.976	245.608
.81	959.075	30.511	−467.825	−665.900	−659.822	−520.020	−297.527	−28.813	260.525
.82	1074.241	60.505	−497.549	−731.122	−738.946	−594.723	−352.936	−53.381	275.311
.83	1204.057	96.536	−528.299	−802.554	−827.369	−679.628	−417.282	−83.567	289.670
.84	1350.448	139.618	−559.905	−880.743	−926.166	−776.095	−491.925	−120.408	303.228
.85	1515.598	190.922	−592.143	−966.275	−1036.534	−885.665	−578.424	−165.119	315.519
.86	1701.984	251.801	−624.718	−1059.775	−1159.801	−1010.076	−678.570	−219.117	325.961
.87	1912.411	323.820	−657.251	−1161.909	−1297.443	−1151.295	−794.412	−284.055	333.840
.88	2150.059	408.783	−689.263	−1273.379	−1451.098	−1311.542	−928.299	−361.863	338.280
.89	2418.534	508.772	−720.156	−1394.926	−1622.582	−1493.325	−1082.921	−454.787	338.212
.90	2721.919	626.185	−749.192	−1527.325	−1813.909	−1699.474	−1261.356	−565.438	332.341
.91	3064.845	763.785	−775.460	−1671.381	−2027.306	−1933.179	−1467.125	−696.854	319.100
.92	3452.557	924.754	−797.857	−1827.927	−2265.238	−2198.039	−1704.253	−852.565	296.602
.93	3891.002	1112.748	−815.040	−1997.813	−2530.428	−2498.111	−1977.343	−1036.665	262.584
.94	4386.909	1331.973	−825.393	−2181.899	−2825.881	−2837.961	−2291.646	−1253.902	214.334
.95	4947.909	1587.261	−826.976	−2381.040	−3154.914	−3222.731	−2653.163	−1509.778	148.617
.96	5582.642	1884.159	−817.470	−2596.075	−3521.178	−3658.210	−3068.739	−1810.666	61.580
.97	6300.889	2229.033	−794.111	−2827.802	−3928.686	−4150.902	−3546.178	−2163.931	−51.357
.98	7113.727	2629.183	−753.620	−3076.957	−4381.854	−4708.119	−4094.376	−2578.095	−195.622
.99	8033.694	3092.975	−692.111	−3344.182	−4885.520	−5338.075	−4723.467	−3062.996	−377.640

z	J 11, 10	J 11, 11
.01	1.041	1.041
.02	1.085	1.085
.03	1.132	1.132
.04	1.181	1.181
.05	1.234	1.234
.06	1.290	1.290
.07	1.350	1.350
.08	1.414	1.414
.09	1.482	1.482
.10	1.555	1.555
.11	1.633	1.633
.12	1.717	1.717
.13	1.806	1.806
.14	1.902	1.902
.15	2.005	2.005
.16	2.115	2.115
.17	2.234	2.234
.18	2.362	2.362
.19	2.500	2.500
.20	2.649	2.649
.21	2.809	2.810
.22	2.982	2.983
.23	3.170	3.171
.24	3.373	3.374
.25	3.593	3.595
.26	3.831	3.835
.27	4.090	4.095
.28	4.372	4.378
.29	4.678	4.687
.30	5.012	5.023
.31	5.376	5.391
.32	5.773	5.793
.33	6.206	6.233
.34	6.680	6.715
.35	7.199	7.244
.36	7.767	7.825
.37	8.389	8.465
.38	9.072	9.168
.39	9.821	9.944
.40	10.645	10.800
.41	11.550	11.746
.42	12.546	12.791
.43	13.643	13.949
.44	14.851	15.232
.45	16.183	16.655
.46	17.652	18.236
.47	19.273	19.992
.48	21.064	21.947
.49	23.042	24.123
.50	25.229	26.549

Z	J 11, 10	J 11, 11
.51	27.647	29.254
.52	30.323	32.275
.53	33.284	35.650
.54	36.564	39.424
.55	40.196	43.647
.56	44.220	48.376
.57	48.681	53.676
.58	53.626	59.619
.59	59.111	66.289
.60	65.194	73.777
.61	71.944	82.191
.62	79.434	91.651
.63	87.746	102.291
.64	96.974	114.268
.65	107.218	127.754
.66	118.592	142.950
.67	131.220	160.080
.68	145.243	179.401
.69	160.815	201.201
.70	178.105	225.812
.71	197.303	253.609
.72	218.619	285.016
.73	242.283	320.518
.74	268.551	360.666
.75	297.704	406.085
.76	330.053	457.488
.77	365.940	515.684
.78	405.740	581.594
.79	449.866	656.268
.80	498.771	740.899
.81	552.951	836.845
.82	612.946	945.655
.83	679.347	1069.088
.84	752.796	1209.152
.85	833.990	1368.131
.86	923.683	1548.626
.87	1022.690	1753.603
.88	1131.885	1986.438
.89	1252.204	2250.976
.90	1384.648	2551.600
.91	1530.274	2893.301
.92	1690.200	3281.765
.93	1865.594	3723.472
.94	2057.667	4225.798
.95	2267.664	4797.151
.96	2496.850	5447.107
.97	2746.481	6186.565
.98	3017.788	7027.945
.99	3311.938	7985.385

Z	J 12, 1	J 12, 2	J 12, 3	J 12, 4	J 12, 5	J 12, 6	J 12, 7	J 12, 8	J 12, 9
.01	0.103	−10.285	0.815	1.038	1.041	1.041	1.041	1.041	1.041
.02	0.211	−10.581	0.619	1.071	1.085	1.085	1.085	1.085	1.085
.03	0.326	−10.888	0.411	1.099	1.130	1.132	1.132	1.132	1.132
.04	0.448	−11.207	0.191	1.122	1.178	1.181	1.181	1.181	1.181
.05	0.577	−11.538	−0.042	1.138	1.228	1.234	1.234	1.234	1.234
.06	0.714	−11.882	−0.288	1.148	1.279	1.289	1.290	1.290	1.290
.07	0.859	−12.239	−0.550	1.151	1.331	1.348	1.350	1.350	1.350
.08	1.013	−12.611	−0.827	1.145	1.385	1.411	1.414	1.414	1.414
.09	1.178	−12.997	−1.122	1.131	1.440	1.477	1.482	1.482	1.482
.10	1.353	−13.399	−1.434	1.107	1.495	1.548	1.554	1.555	1.555
.11	1.540	−13.817	−1.765	1.073	1.551	1.622	1.632	1.633	1.633
.12	1.739	−14.252	−2.116	1.027	1.606	1.700	1.714	1.716	1.717
.13	1.951	−14.705	−2.489	0.968	1.661	1.782	1.802	1.805	1.806
.14	2.178	−15.177	−2.886	0.896	1.714	1.869	1.896	1.901	1.902
.15	2.421	−15.669	−3.307	0.809	1.766	1.960	1.997	2.003	2.005
.16	2.681	−16.181	−3.754	0.706	1.815	2.055	2.104	2.113	2.115
.17	2.959	−16.715	−4.229	0.584	1.860	2.155	2.218	2.231	2.234
.18	3.257	−17.272	−4.735	0.443	1.902	2.259	2.340	2.358	2.361
.19	3.577	−17.853	−5.273	0.281	1.938	2.367	2.470	2.494	2.499
.20	3.921	−18.459	−5.845	0.096	1.968	2.479	2.608	2.640	2.647
.21	4.290	−19.091	−6.454	−0.115	1.990	2.594	2.755	2.796	2.807
.22	4.686	−19.752	−7.102	−0.354	2.003	2.714	2.912	2.965	2.979
.23	5.113	−20.441	−7.793	−0.623	2.006	2.836	3.079	3.146	3.165
.24	5.573	−21.161	−8.529	−0.926	1.996	2.961	3.256	3.342	3.366
.25	6.068	−21.913	−9.313	−1.264	1.973	3.088	3.443	3.551	3.583
.26	6.602	−22.699	−10.149	−1.643	1.932	3.216	3.642	3.777	3.818
.27	7.179	−23.520	−11.041	−2.064	1.873	3.345	3.853	4.020	4.073
.28	7.802	−24.378	−11.992	−2.533	1.793	3.474	4.076	4.281	4.349
.29	8.475	−25.276	−13.008	−3.054	1.687	3.600	4.311	4.562	4.648
.30	9.204	−26.214	−14.092	−3.632	1.554	3.723	4.559	4.864	4.973
.31	9.993	−27.195	−15.251	−4.271	1.388	3.842	4.819	5.189	5.325
.32	10.848	−28.221	−16.488	−4.979	1.186	3.953	5.093	5.539	5.707
.33	11.776	−29.295	−17.812	−5.760	0.943	4.055	5.379	5.914	6.123
.34	12.783	−30.417	−19.227	−6.623	0.654	4.145	5.678	6.317	6.574
.35	13.878	−31.592	−20.741	−7.575	0.312	4.220	5.989	6.749	7.064
.36	15.069	−32.820	−22.361	−8.624	−0.089	4.275	6.312	7.213	7.597
.37	16.365	−34.105	−24.096	−9.781	−0.557	4.308	6.646	7.710	8.177
.38	17.777	−35.448	−25.955	−11.054	−1.100	4.313	6.989	8.242	8.807
.39	19.317	−36.852	−27.946	−12.456	−1.728	4.283	7.341	8.811	9.493
.40	20.998	−38.320	−30.081	−13.998	−2.451	4.214	7.698	9.420	10.239
.41	22.836	−39.854	−32.370	−15.696	−3.280	4.097	8.060	10.069	11.050
.42	24.846	−41.456	−34.827	−17.562	−4.230	3.924	8.422	10.761	11.933
.43	27.046	−43.128	−37.463	−19.615	−5.314	3.685	8.780	11.498	12.893
.44	29.458	−44.873	−40.293	−21.873	−6.550	3.369	9.130	12.280	13.937
.45	32.104	−46.691	−43.333	−24.355	−7.955	2.962	9.467	13.110	15.072
.46	35.009	−48.585	−46.600	−27.085	−9.551	2.451	9.782	13.988	16.305
.47	38.204	−50.556	−50.111	−30.086	−11.360	1.818	10.069	14.914	17.646
.48	41.719	−52.603	−53.886	−33.386	−13.410	1.044	10.317	15.889	19.101
.49	45.593	−54.727	−57.946	−37.014	−15.728	0.107	10.514	16.911	20.681
.50	49.864	−56.927	−62.315	−41.005	−18.348	−1.019	10.646	17.979	22.396

Z	J 12, 1	J 12, 2	J 12, 3	J 12, 4	J 12, 5	J 12, 6	J 12, 7	J 12, 8	J 12, 9
.51	54.581	−59.201	−67.017	−45.395	−21.307	−2.361	10.698	19.090	24.254
.52	59.794	−61.545	−72.078	−50.223	−24.645	−3.954	10.649	20.241	26.268
.53	65.562	−63.955	−77.528	−55.535	−28.409	−5.834	10.476	21.424	28.446
.54	71.951	−66.424	−83.398	−61.380	−32.652	−8.045	10.153	22.632	30.802
.55	79.037	−68.943	−89.721	−67.814	−37.430	−10.635	9.649	23.855	33.346
.56	86.904	−71.500	−96.533	−74.895	−42.810	−13.661	8.925	25.079	36.090
.57	95.647	−74.081	−103.874	−82.692	−48.866	−17.186	7.939	26.288	39.044
.58	105.376	−76.667	−111.783	−91.279	−55.681	−21.285	6.640	27.461	42.220
.59	116.214	−79.233	−120.306	−100.736	−63.347	−26.039	4.968	28.570	45.627
.60	128.300	−81.752	−129.490	−111.156	−71.969	−31.546	2.855	29.584	49.274
.61	141.795	−84.188	−139.384	−122.637	−81.665	−37.912	0.221	30.463	53.169
.62	156.878	−86.495	−150.043	−135.290	−92.568	−45.265	−3.030	31.157	57.314
.63	173.755	−88.623	−161.523	−149.239	−104.827	−53.744	−7.006	31.609	61.713
.64	192.661	−90.505	−173.881	−164.617	−118.609	−63.513	−11.835	31.745	66.361
.65	213.864	−92.065	−187.180	−181.576	−134.104	−74.758	−17.665	31.481	71.251
.66	237.667	−93.209	−201.485	−200.279	−151.524	−87.691	−24.670	30.713	76.366
.67	264.420	−93.824	−216.859	−220.910	−171.108	−102.554	−33.048	29.315	81.681
.68	294.520	−93.778	−233.371	−243.668	−193.125	−119.625	−43.035	27.140	87.163
.69	328.420	−92.911	−251.088	−268.777	−217.880	−139.220	−54.901	24.008	92.759
.70	366.641	−91.030	−270.075	−296.479	−245.712	−161.701	−68.961	19.709	98.405
.71	409.777	−87.911	−290.397	−327.043	−277.008	−187.483	−85.582	13.989	104.011
.72	458.509	−83.284	−312.115	−360.766	−312.198	−217.039	−105.187	6.548	109.463
.73	513.617	−76.829	−335.280	−397.970	−351.769	−250.908	−128.272	−2.971	114.615
.74	575.995	−68.168	−359.937	−439.011	−396.269	−289.709	−155.407	−14.991	119.281
.75	646.668	−56.853	−386.116	−484.279	−446.314	−334.149	−187.258	−30.013	123.228
.76	726.812	−42.356	−413.830	−534.199	−502.596	−385.034	−224.595	−48.630	126.166
.77	817.776	−24.052	−443.069	−589.234	−565.893	−443.287	−268.313	−71.545	127.735
.78	921.111	−1.204	−473.790	−649.888	−637.080	−509.961	−319.447	−99.586	127.489
.79	1038.596	27.058	−505.914	−716.710	−717.139	−586.259	−379.201	−133.732	124.884
.80	1172.276	61.757	−539.312	−790.291	−807.172	−673.556	−448.967	−175.138	119.252
.81	1324.500	104.097	−573.794	−871.270	−908.418	−773.423	−530.358	−225.164	109.776
.82	1497.970	155.494	−609.092	−960.334	−1022.262	−887.650	−625.245	−285.414	95.468
.83	1695.792	217.615	−644.847	−1058.216	−1150.260	−1018.283	−735.791	−357.774	75.125
.84	1921.539	292.414	−680.579	−1165.697	−1294.151	−1167.655	−864.503	−444.465	47.295
.85	2179.319	382.187	−715.672	−1283.602	−1455.882	−1338.428	−1014.283	−548.098	10.222
.86	2473.862	489.626	−749.331	−1412.798	−1637.629	−1533.636	−1188.485	−671.738	−38.206
.87	2810.606	617.890	−780.557	−1554.187	−1841.820	−1756.740	−1390.991	−818.986	−100.532
.88	3195.813	770.676	−808.091	−1708.696	−2071.164	−2011.678	−1626.288	−994.068	−179.806
.89	3636.690	952.318	−830.372	−1877.270	−2328.680	−2302.940	−1899.563	−1201.940	−279.686
.90	4141.529	1167.885	−845.468	−2060.850	−2617.723	−2635.634	−2216.807	−1448.410	−404.547
.91	4719.879	1423.307	−851.003	−2260.356	−2942.022	−3015.570	−2584.938	−1740.284	−559.620
.92	5382.730	1725.519	−844.072	−2476.658	−3305.714	−3449.356	−3011.944	−2085.528	−751.148
.93	6142.735	2082.625	−821.137	−2710.544	−3713.379	−3944.502	−3507.041	−2493.464	−986.571
.94	7014.456	2504.086	−777.899	−2962.669	−4170.075	−4509.535	−4080.855	−2974.991	−1274.748
.95	8014.658	3000.950	−709.164	−3233.509	−4681.386	−5154.131	−4745.638	−3542.850	−1626.216
.96	9162.644	3586.105	−608.665	−3523.285	−5253.457	−5889.272	−5515.510	−4211.921	−2053.489
.97	10480.618	4274.579	−468.863	−3831.880	−5893.027	−6727.390	−6406.722	−4999.572	−2571.419
.98	11994.147	5083.889	−280.718	−4158.735	−6607.481	−7682.576	−7437.985	−5926.067	−3197.611
.99	13732.648	6034.439	−33.405	−4502.723	−7404.878	−8770.766	−8630.823	−7015.028	−3952.913

Z	J 12, 10	J 12, 11	J 12, 12
.01	1.041	1.041	1.041
.02	1.085	1.085	1.085
.03	1.132	1.132	1.132
.04	1.181	1.181	1.181
.05	1.234	1.234	1.234
.06	1.290	1.290	1.290
.07	1.350	1.350	1.350
.08	1.414	1.414	1.414
.09	1.482	1.482	1.482
.10	1.555	1.555	1.555
.11	1.633	1.633	1.633
.12	1.717	1.717	1.717
.13	1.806	1.806	1.806
.14	1.902	1.902	1.902
.15	2.005	2.005	2.005
.16	2.115	2.115	2.115
.17	2.234	2.234	2.234
.18	2.362	2.362	2.362
.19	2.500	2.500	2.500
.20	2.649	2.649	2.649
.21	2.809	2.810	2.810
.22	2.982	2.983	2.983
.23	3.170	3.171	3.171
.24	3.373	3.374	3.375
.25	3.592	3.595	3.596
.26	3.831	3.834	3.835
.27	4.090	4.095	4.096
.28	4.371	4.378	4.380
.29	4.677	4.686	4.690
.30	5.010	5.023	5.027
.31	5.373	5.391	5.396
.32	5.770	5.792	5.800
.33	6.202	6.232	6.243
.34	6.675	6.714	6.729
.35	7.192	7.242	7.262
.36	7.757	7.823	7.849
.37	8.377	8.461	8.496
.38	9.056	9.164	9.209
.39	9.801	9.938	9.998
.40	10.619	10.792	10.870
.41	11.517	11.735	11.835
.42	12.505	12.778	12.907
.43	13.590	13.932	14.097
.44	14.785	15.210	15.420
.45	16.099	16.627	16.894
.46	17.548	18.200	18.538
.47	19.143	19.947	20.372
.48	20.902	21.890	22.423
.49	22.841	24.051	24.719
.50	24.979	26.458	27.292

Z	J 12, 10	J 12, 11	J 12, 12
.51	27.338	29.141	30.178
.52	29.942	32.134	33.419
.53	32.815	35.474	37.064
.54	35.987	39.205	41.168
.55	39.489	43.375	45.792
.56	43.355	48.040	51.008
.57	47.624	53.260	56.898
.58	52.336	59.106	63.556
.59	57.538	65.656	71.088
.60	63.280	72.999	79.619
.61	69.617	81.235	89.288
.62	76.608	90.477	100.258
.63	84.318	100.852	112.714
.64	92.819	112.506	126.868
.65	102.186	125.600	142.967
.66	112.503	140.317	161.291
.67	123.857	156.866	182.164
.68	136.345	175.478	205.958
.69	150.067	196.419	233.101
.70	165.131	219.986	264.088
.71	181.649	246.514	299.486
.72	199.737	276.381	339.950
.73	219.517	310.013	386.235
.74	241.111	347.892	439.214
.75	264.639	390.557	499.891
.76	290.219	438.618	569.426
.77	317.962	492.759	649.160
.78	347.963	553.750	740.641
.79	380.301	622.457	845.658
.80	415.024	699.850	966.278
.81	452.141	787.019	1104.894
.82	491.612	885.182	1264.271
.83	533.323	995.706	1447.609
.84	577.074	1120.116	1658.614
.85	622.548	1260.115	1901.574
.86	669.282	1417.601	2181.453
.87	716.627	1594.687	2504.002
.88	763.703	1793.716	2875.884
.89	809.340	2017.287	3304.817
.90	852.007	2268.273	3799.745
.91	889.731	2549.841	4371.035
.92	919.994	2865.474	5030.704
.93	939.608	3218.987	5792.682
.94	944.567	3614.546	6673.118
.95	929.872	4056.677	7690.737
.96	889.313	4550.282	8867.256
.97	815.210	5100.623	10227.843
.98	698.114	5713.329	11801.693
.99	526.434	6394.363	13622.653

Z	J 13, 1	J 13, 2	J 13, 3	J 13, 4	J 13, 5	J 13, 6	J 13, 7	J 13, 8	J 13, 9
.01	0.113	−11.316	0.794	1.038	1.041	1.041	1.041	1.041	1.041
.02	0.233	−11.644	0.576	1.070	1.085	1.085	1.085	1.085	1.085
.03	0.359	−11.984	0.345	1.096	1.130	1.132	1.132	1.132	1.132
.04	0.493	−12.337	0.101	1.116	1.178	1.181	1.181	1.181	1.181
.05	0.635	−12.704	−0.158	1.130	1.227	1.233	1.234	1.234	1.234
.06	0.786	−13.086	−0.433	1.135	1.278	1.289	1.290	1.290	1.290
.07	0.947	−13.482	−0.725	1.132	1.330	1.348	1.350	1.350	1.350
.08	1.118	−13.895	−1.034	1.120	1.383	1.411	1.414	1.414	1.414
.09	1.299	−14.324	−1.361	1.098	1.436	1.477	1.482	1.482	1.482
.10	1.493	−14.770	−1.709	1.065	1.490	1.547	1.554	1.555	1.555
.11	1.699	−15.235	−2.079	1.021	1.543	1.621	1.631	1.633	1.633
.12	1.920	−15.719	−2.471	0.963	1.596	1.698	1.714	1.716	1.717
.13	2.155	−16.223	−2.887	0.890	1.647	1.780	1.802	1.805	1.806
.14	2.407	−16.749	−3.330	0.803	1.697	1.866	1.896	1.901	1.902
.15	2.677	−17.296	−3.801	0.698	1.743	1.956	1.996	2.003	2.005
.16	2.965	−17.867	−4.301	0.574	1.786	2.050	2.103	2.113	2.115
.17	3.274	−18.462	−4.833	0.430	1.825	2.147	2.217	2.231	2.234
.18	3.606	−19.084	−5.398	0.263	1.858	2.249	2.338	2.357	2.361
.19	3.962	−19.732	−6.001	0.073	1.885	2.354	2.467	2.493	2.499
.20	4.345	−20.409	−6.642	−0.145	1.903	2.462	2.604	2.639	2.647
.21	4.756	−21.115	−7.325	−0.392	1.912	2.574	2.750	2.795	2.806
.22	5.198	−21.853	−8.052	−0.670	1.910	2.688	2.905	2.963	2.978
.23	5.675	−22.624	−8.827	−0.983	1.895	2.804	3.070	3.144	3.164
.24	6.188	−23.430	−9.654	−1.335	1.865	2.921	3.244	3.338	3.365
.25	6.742	−24.273	−10.535	−1.728	1.817	3.039	3.429	3.547	3.582
.26	7.340	−25.153	−11.475	−2.166	1.750	3.157	3.624	3.772	3.817
.27	7.986	−26.074	−12.479	−2.655	1.659	3.273	3.830	4.013	4.071
.28	8.685	−27.038	−13.551	−3.198	1.543	3.386	4.046	4.272	4.346
.29	9.441	−28.046	−14.696	−3.800	1.397	3.494	4.274	4.550	4.644
.30	10.260	−29.101	−15.919	−4.468	1.216	3.596	4.513	4.848	4.967
.31	11.148	−30.205	−17.227	−5.208	0.998	3.690	4.762	5.169	5.318
.32	12.111	−31.360	−18.627	−6.026	0.735	3.772	5.023	5.513	5.698
.33	13.158	−32.570	−20.124	−6.929	0.423	3.839	5.293	5.881	6.110
.34	14.295	−33.836	−21.726	−7.927	0.056	3.889	5.573	6.275	6.558
.35	15.533	−35.162	−23.442	−9.029	−0.375	3.917	5.862	6.697	7.044
.36	16.881	−36.550	−25.281	−10.243	−0.876	3.919	6.158	7.148	7.571
.37	18.350	−38.003	−27.252	−11.582	−1.458	3.889	6.459	7.629	8.143
.38	19.954	−39.523	−29.366	−13.058	−2.130	3.820	6.764	8.142	8.765
.39	21.706	−41.115	−31.634	−14.683	−2.904	3.706	7.070	8.688	9.439
.40	23.622	−42.780	−34.068	−16.473	−3.792	3.538	7.373	9.269	10.171
.41	25.718	−44.522	−36.682	−18.445	−4.809	3.307	7.670	9.884	10.965
.42	28.016	−46.344	−39.490	−20.615	−5.970	3.003	7.956	10.535	11.826
.43	30.537	−48.247	−42.508	−23.005	−7.294	2.611	8.225	11.221	12.760
.44	33.305	−50.234	−45.753	−25.637	−8.802	2.119	8.469	11.944	13.772
.45	36.348	−52.309	−49.245	−28.534	−10.514	1.509	8.681	12.701	14.867
.46	39.698	−54.471	−53.002	−31.724	−12.459	0.763	8.850	13.492	16.052
.47	43.389	−56.724	−57.047	−35.236	−14.663	−0.142	8.964	14.315	17.333
.48	47.462	−59.066	−61.405	−39.105	−17.159	−1.229	9.008	15.165	18.717
.49	51.960	−61.499	−66.100	−43.367	−19.984	−2.527	8.966	16.039	20.210
.50	56.935	−64.020	−71.161	−48.062	−23.179	−4.070	8.818	16.929	21.818

Z	J 13, 1	J 13, 2	J 13, 3	J 13, 4	J 13, 5	J 13, 6	J 13, 7	J 13, 8	J 13, 9
.51	62.443	−66.628	−76.618	−53.237	−26.789	−5.894	8.540	17.828	23.547
.52	68.550	−69.318	−82.505	−58.940	−30.867	−8.042	8.104	18.725	25.404
.53	75.329	−72.085	−88.858	−65.229	−35.470	−10.564	7.478	19.606	27.394
.54	82.864	−74.918	−95.714	−72.164	−40.666	−13.515	6.622	20.454	29.520
.55	91.249	−77.808	−103.116	−79.815	−46.528	−16.961	5.493	21.249	31.788
.56	100.594	−80.738	−111.109	−88.258	−53.141	−20.975	4.037	21.964	34.198
.57	111.021	−83.690	−119.741	−97.578	−60.598	−25.643	2.192	22.566	36.750
.58	122.671	−86.638	−129.065	−107.869	−69.009	−31.061	−0.115	23.017	39.440
.59	135.706	−89.550	−139.136	−119.235	−78.492	−37.342	−2.968	23.269	42.263
.60	150.308	−92.389	−150.015	−131.795	−89.186	−44.614	−6.467	23.264	45.207
.61	166.691	−95.104	−161.764	−145.676	−101.244	−53.024	−10.728	22.930	48.255
.62	185.094	−97.636	−174.452	−161.023	−114.842	−62.741	−15.887	22.185	51.383
.63	205.795	−99.912	−188.150	−177.995	−130.178	−73.959	−22.102	20.925	54.556
.64	229.114	−101.841	−202.933	−196.770	−147.476	−86.903	−29.560	19.027	57.732
.65	255.417	−103.314	−218.877	−217.545	−166.988	−101.827	−38.478	16.346	60.851
.66	285.125	−104.199	−236.065	−240.539	−189.003	−119.027	−49.108	12.703	63.838
.67	318.726	−104.334	−254.578	−265.993	−213.845	−138.843	−61.748	7.889	66.596
.68	356.781	−103.524	−274.497	−294.177	−241.882	−161.662	−76.744	1.652	69.003
.69	399.937	−101.535	−295.906	−325.387	−273.531	−187.934	−94.499	−6.311	70.904
.70	448.944	−98.083	−318.881	−359.953	−309.265	−218.175	−115.487	−16.357	72.107
.71	504.667	−92.829	−343.494	−398.239	−349.617	−252.977	−140.259	−28.915	72.372
.72	568.110	−85.364	−369.807	−440.644	−395.194	−293.024	−169.461	−44.495	71.402
.73	640.433	−75.198	−397.870	−487.611	−446.682	−339.102	−203.846	−63.702	68.830
.74	722.985	−61.741	−427.709	−539.625	−504.856	−392.114	−244.295	−87.260	64.206
.75	817.327	−44.291	−459.326	−597.217	−570.597	−453.103	−291.836	−116.026	56.977
.76	925.276	−22.005	−492.685	−660.970	−644.897	−523.267	−347.671	−151.020	46.467
.77	1048.940	6.126	−527.704	−731.518	−728.883	−603.985	−413.204	−193.453	31.849
.78	1190.771	41.305	−564.238	−809.551	−823.827	−696.848	−490.076	−244.766	12.117
.79	1353.622	84.971	−602.064	−895.815	−931.163	−803.683	−580.203	−306.666	−13.951
.80	1540.814	138.840	−640.859	−991.115	−1052.516	−926.595	−685.824	−381.180	−47.843
.81	1756.215	204.960	−680.173	−1096.310	−1189.715	−1068.006	−809.552	−470.711	−91.360
.82	2004.333	285.772	−719.397	−1212.315	−1344.824	−1230.702	−954.441	−578.110	−146.685
.83	2290.422	384.187	−757.726	−1340.096	−1520.167	−1417.889	−1124.058	−706.757	−216.458
.84	2620.611	503.670	−794.107	−1480.659	−1718.355	−1633.254	−1322.565	−860.655	−303.868
.85	3002.052	648.349	−827.184	−1635.042	−1942.326	−1881.033	−1554.821	−1044.546	−412.765
.86	3443.091	823.136	−855.228	−1804.295	−2195.373	−2166.096	−1826.499	−1264.045	−547.791
.87	3953.477	1033.874	−876.047	−1989.461	−2481.183	−2494.036	−2144.216	−1525.801	−714.537
.88	4544.593	1287.513	−886.884	−2191.539	−2803.880	−2871.275	−2515.693	−1837.678	−919.734
.89	5229.741	1592.313	−884.294	−2411.449	−3168.064	−3305.180	−2949.931	−2208.978	−1171.475
.90	6024.461	1958.090	−863.989	−2649.971	−3578.855	−3804.200	−3457.425	−2650.701	−1479.486
.91	6946.924	2396.503	−820.656	−2907.680	−4041.936	−4378.016	−4050.406	−3175.846	−1855.442
.92	8018.368	2921.393	−747.736	−3184.854	−4563.601	−5037.717	−4743.121	−3799.771	−2313.354
.93	9263.632	3549.190	−637.165	−3481.363	−5150.795	−5795.990	−5552.161	−4540.611	−2870.015
.94	10711.753	4299.381	−479.047	−3796.519	−5811.148	−6667.333	−6496.833	−5419.770	−3545.543
.95	12396.702	5195.080	−261.280	−4128.903	−6553.019	−7668.311	−7599.602	−6462.502	−4364.023
.96	14358.217	6263.688	30.899	−4476.140	−7385.515	−8817.829	−8886.591	−7698.594	−5354.268
.97	16642.761	7537.665	415.466	−4834.613	−8318.491	−10137.415	−10388.146	−9163.139	−6550.713
.98	19304.704	9055.463	914.259	−5199.132	−9362.564	−11651.592	−12139.525	−10897.492	−7994.497
.99	22407.636	10862.608	1553.753	−5562.497	−10529.064	−13388.229	−14181.644	−12950.338	−9734.726

Z	J 13, 10	J 13, 11	J 13, 12	J 13, 13
.01	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500
.20	2.649	2.649	2.649	2.649
.21	2.809	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983
.23	3.170	3.171	3.171	3.171
.24	3.372	3.374	3.375	3.375
.25	3.592	3.595	3.596	3.596
.26	3.830	3.834	3.835	3.836
.27	4.089	4.095	4.096	4.097
.28	4.370	4.378	4.380	4.381
.29	4.676	4.686	4.689	4.691
.30	5.008	5.022	5.027	5.029
.31	5.371	5.390	5.396	5.398
.32	5.766	5.791	5.800	5.803
.33	6.198	6.230	6.243	6.247
.34	6.669	6.712	6.728	6.734
.35	7.184	7.240	7.261	7.270
.36	7.747	7.819	7.848	7.860
.37	8.364	8.456	8.494	8.510
.38	9.039	9.157	9.207	9.229
.39	9.779	9.929	9.995	10.023
.40	10.590	10.781	10.866	10.904
.41	11.480	11.720	11.831	11.881
.42	12.457	12.758	12.901	12.967
.43	13.529	13.907	14.089	14.176
.44	14.708	15.177	15.410	15.523
.45	16.002	16.585	16.880	17.027
.46	17.425	18.146	18.519	18.710
.47	18.989	19.878	20.349	20.594
.48	20.709	21.802	22.393	22.708
.49	22.600	23.940	24.680	25.083
.50	24.679	26.318	27.241	27.755

Z	J 13, 10	J 13, 11	J 13, 12	J 13, 13
.51	26.965	28.964	30.113	30.766
.52	29.479	31.910	33.337	34.164
.53	32.242	35.193	36.960	38.004
.54	35.278	38.853	41.035	42.349
.55	38.615	42.936	45.624	47.274
.56	42.278	47.491	50.796	52.863
.57	46.299	52.577	56.632	59.214
.58	50.709	58.257	63.221	66.440
.59	55.543	64.602	70.668	74.673
.60	60.837	71.692	79.092	84.064
.61	66.627	79.617	88.629	94.790
.62	72.953	88.477	99.435	107.055
.63	79.855	98.383	111.687	121.096
.64	87.373	109.459	125.589	137.189
.65	95.545	121.844	141.375	155.653
.66	104.411	135.693	159.311	176.861
.67	114.003	151.175	179.704	201.246
.68	124.351	168.481	202.904	229.315
.69	135.474	187.819	229.314	261.654
.70	147.383	209.423	259.393	298.951
.71	160.071	233.545	293.669	342.007
.72	173.510	260.465	332.747	391.757
.73	187.644	290.487	377.321	449.294
.74	202.383	323.943	428.185	515.898
.75	217.588	361.190	486.250	593.063
.76	233.060	402.613	552.558	682.540
.77	248.524	448.622	628.306	786.382
.78	263.610	499.649	714.863	906.991
.79	277.824	556.146	813.797	1047.186
.80	290.524	618.576	926.903	1210.274
.81	300.875	687.404	1056.234	1400.139
.82	307.807	763.085	1204.139	1621.339
.83	309.960	846.047	1373.301	1879.234
.84	305.609	936.663	1566.787	2180.122
.85	292.587	1035.225	1788.093	2531.412
.86	268.176	1141.897	2041.208	2941.820
.87	228.983	1256.663	2330.676	3421.607
.88	170.792	1379.262	2661.666	3982.858
.89	88.371	1509.092	3040.051	4639.804
.90	−24.744	1645.106	3472.495	5409.218
.91	−176.530	1785.665	3966.551	6310.870
.92	−376.797	1928.363	4530.756	7368.072
.93	−637.596	2069.804	5174.750	8608.319
.94	−973.691	2205.324	5909.385	10064.040
.95	−1403.146	2328.644	6746.852	11773.509
.96	−1948.022	2431.442	7700.815	13781.897
.97	−2635.214	2502.820	8786.515	16142.505
.98	−3497.475	2528.653	10020.922	18918.276
.99	−4574.618	2490.775	11422.832	22183.512

Z	J 14, 1	J 14, 2	J 14, 3	J 14, 4	J 14, 5	J 14, 6	J 14, 7	J 14, 8	J 14, 9
.01	0.123	−12.346	0.774	1.037	1.041	1.041	1.041	1.041	1.041
.02	0.254	−12.706	0.534	1.068	1.085	1.085	1.085	1.085	1.085
.03	0.392	−13.079	0.280	1.093	1.130	1.132	1.132	1.132	1.132
.04	0.539	−13.467	0.010	1.111	1.177	1.181	1.181	1.181	1.181
.05	0.694	−13.871	−0.275	1.121	1.226	1.233	1.234	1.234	1.234
.06	0.859	−14.290	−0.578	1.122	1.277	1.289	1.290	1.290	1.290
.07	1.035	−14.726	−0.899	1.114	1.328	1.348	1.350	1.350	1.350
.08	1.222	−15.179	−1.240	1.096	1.380	1.411	1.414	1.414	1.414
.09	1.421	−15.651	−1.601	1.066	1.432	1.477	1.482	1.482	1.482
.10	1.633	−16.142	−1.985	1.024	1.484	1.546	1.554	1.555	1.555
.11	1.859	−16.653	−2.393	0.969	1.536	1.620	1.631	1.633	1.633
.12	2.101	−17.186	−2.826	0.899	1.586	1.697	1.714	1.716	1.717
.13	2.360	−17.741	−3.286	0.813	1.634	1.778	1.802	1.805	1.806
.14	2.636	−18.320	−3.775	0.709	1.679	1.863	1.895	1.901	1.902
.15	2.932	−18.924	−4.295	0.586	1.721	1.952	1.995	2.003	2.005
.16	3.249	−19.553	−4.847	0.442	1.758	2.044	2.102	2.113	2.115
.17	3.590	−20.210	−5.436	0.275	1.790	2.140	2.215	2.231	2.234
.18	3.955	−20.895	−6.062	0.083	1.815	2.239	2.336	2.357	2.361
.19	4.347	−21.611	−6.729	−0.136	1.832	2.341	2.464	2.492	2.499
.20	4.768	−22.358	−7.439	−0.386	1.839	2.446	2.600	2.638	2.646
.21	5.222	−23.139	−8.195	−0.668	1.834	2.553	2.745	2.794	2.806
.22	5.710	−23.955	−9.002	−0.986	1.817	2.662	2.899	2.962	2.978
.23	6.236	−24.808	−9.861	−1.344	1.784	2.772	3.061	3.142	3.164
.24	6.804	−25.700	−10.778	−1.744	1.733	2.882	3.233	3.335	3.364
.25	7.417	−26.632	−11.757	−2.191	1.662	2.991	3.414	3.543	3.581
.26	8.078	−27.608	−12.802	−2.690	1.567	3.097	3.605	3.766	3.815
.27	8.794	−28.629	−13.918	−3.245	1.445	3.200	3.806	4.005	4.069
.28	9.568	−29.698	−15.110	−3.862	1.293	3.298	4.017	4.262	4.343
.29	10.407	−30.816	−16.384	−4.546	1.106	3.388	4.237	4.537	4.640
.30	11.316	−31.988	−17.747	−5.305	0.879	3.469	4.467	4.832	4.962
.31	12.303	−33.214	−19.204	−6.144	0.607	3.538	4.706	5.148	5.310
.32	13.375	−34.499	−20.765	−7.073	0.284	3.590	4.953	5.486	5.688
.33	14.540	−35.845	−22.436	−8.099	−0.096	3.624	5.208	5.848	6.098
.34	15.807	−37.255	−24.226	−9.232	−0.542	3.634	5.469	6.234	6.542
.35	17.188	−38.732	−26.144	−10.482	−1.061	3.615	5.734	6.645	7.023
.36	18.693	−40.280	−28.202	−11.862	−1.663	3.562	6.003	7.083	7.544
.37	20.337	−41.901	−30.409	−13.384	−2.359	3.469	6.272	7.548	8.109
.38	22.132	−43.600	−32.778	−15.062	−3.160	3.326	6.538	8.042	8.721
.39	24.096	−45.379	−35.322	−16.911	−4.081	3.127	6.798	8.565	9.384
.40	26.245	−47.242	−38.056	−18.950	−5.134	2.861	7.047	9.116	10.102
.41	28.602	−49.192	−40.995	−21.196	−6.339	2.516	7.279	9.696	10.878
.42	31.188	−51.233	−44.155	−23.671	−7.713	2.078	7.488	10.305	11.717
.43	34.030	−53.367	−47.556	−26.399	−9.278	1.533	7.666	10.941	12.623
.44	37.155	−55.599	−51.218	−29.405	−11.059	0.864	7.803	11.602	13.601
.45	40.597	−57.929	−55.161	−32.719	−13.081	0.049	7.889	12.286	14.656
.46	44.393	−60.361	−59.411	−36.371	−15.376	−0.935	7.908	12.988	15.790
.47	48.583	−62.896	−63.993	−40.398	−17.977	−2.113	7.846	13.703	17.009
.48	53.215	−65.535	−68.935	−44.840	−20.924	−3.517	7.683	14.425	18.317
.49	58.342	−68.277	−74.269	−49.739	−24.261	−5.182	7.397	15.145	19.717
.50	64.024	−71.122	−80.026	−55.144	−28.036	−7.149	6.962	15.851	21.212

Z	J 14, 1	J 14, 2	J 14, 3	J 14, 4	J 14, 5	J 14, 6	J 14, 7	J 14, 8	J 14, 9
.51	70.331	−74.066	−86.245	−61.111	−32.306	−9.462	6.346	16.529	22.804
.52	77.341	−77.104	−92.965	−67.699	−37.133	−12.177	5.512	17.161	24.493
.53	85.142	−80.228	−100.228	−74.975	−42.590	−15.354	4.418	17.727	26.279
.54	93.837	−83.429	−108.082	−83.016	−48.756	−19.064	3.013	18.197	28.159
.55	103.542	−86.692	−116.576	−91.903	−55.723	−23.388	1.236	18.541	30.127
.56	114.390	−89.997	−125.766	−101.730	−63.594	−28.419	−0.982	18.716	32.174
.57	126.534	−93.321	−135.710	−112.602	−72.488	−34.265	−3.723	18.675	34.286
.58	140.150	−96.631	−146.472	−124.635	−82.536	−41.049	−7.085	18.357	36.444
.59	155.439	−99.889	−158.122	−137.957	−93.891	−48.914	−11.179	17.691	38.622
.60	172.633	−103.043	−170.731	−152.713	−106.724	−58.024	−16.140	16.589	40.786
.61	192.000	−106.030	−184.378	−169.065	−121.230	−68.569	−22.122	14.948	42.890
.62	213.850	−108.773	−199.146	−187.191	−137.629	−80.767	−29.310	12.640	44.877
.63	238.539	−111.175	−215.122	−207.294	−156.174	−94.870	−37.917	9.513	46.670
.64	266.481	−113.117	−232.399	−229.597	−177.152	−111.170	−48.195	5.387	48.177
.65	298.156	−114.453	−251.071	−254.348	−200.887	−130.003	−60.440	0.042	49.279
.66	334.120	−115.004	−271.237	−281.827	−227.750	−151.756	−75.000	−6.784	49.825
.67	375.021	−114.551	−292.996	−312.343	−258.164	−176.880	−92.280	−15.404	49.632
.68	421.611	−112.827	−316.445	−346.240	−292.609	−205.894	−112.760	−26.195	48.469
.69	474.769	−109.508	−341.679	−383.902	−331.632	−239.398	−137.001	−39.605	46.050
.70	535.516	−104.196	−368.786	−425.752	−375.856	−278.089	−165.663	−56.172	42.025
.71	605.050	−96.412	−397.841	−472.263	−425.991	−322.770	−199.521	−76.541	35.960
.72	684.769	−85.572	−428.903	−523.954	−482.845	−374.374	−239.486	−101.480	27.325
.73	776.308	−70.969	−462.004	−581.402	−547.339	−433.982	−286.631	−131.907	15.466
.74	881.587	−51.744	−497.141	−645.238	−620.521	−502.843	−342.214	−168.923	−0.414
.75	1002.855	−26.857	−534.262	−716.157	−703.584	−582.408	−407.716	−213.841	−21.292
.76	1142.755	4.948	−573.252	−794.919	−797.884	−674.356	−484.881	−268.229	−48.359
.77	1304.395	45.195	−613.909	−882.350	−904.966	−780.636	−575.759	−333.963	−83.069
.78	1491.428	95.724	−655.922	−979.345	−1026.583	−903.504	−682.760	−413.282	−127.196
.79	1708.160	158.764	−698.837	−1086.868	−1164.728	−1045.577	−808.725	−508.862	−182.898
.80	1959.664	237.004	−742.016	−1205.945	−1321.659	−1209.887	−956.994	−623.901	−252.802
.81	2251.924	333.697	−784.589	−1337.664	−1499.939	−1399.950	−1131.500	−762.215	−340.101
.82	2592.006	452.773	−825.391	−1483.160	−1702.464	−1619.838	−1336.872	−928.364	−448.679
.83	2988.256	598.977	−862.884	−1643.600	−1932.511	−1874.269	−1578.556	−1127.796	−583.250
.84	3450.540	778.039	−895.063	−1820.157	−2193.775	−2168.707	−1862.967	−1367.012	−749.538
.85	3990.531	996.877	−919.335	−2013.982	−2490.417	−2509.475	−2197.650	−1653.777	−954.486
.86	4622.044	1263.842	−932.377	−2226.148	−2827.110	−2903.893	−2591.486	−1997.359	−1206.517
.87	5361.440	1589.009	−929.954	−2457.597	−3209.092	−3360.420	−3054.925	−2408.823	−1515.836
.88	6228.109	1984.535	−906.699	−2709.048	−3642.210	−3888.836	−3600.258	−2901.372	−1894.809
.89	7245.037	2465.085	−855.842	−2980.893	−4132.976	−4500.433	−4241.940	−3490.760	−2358.412
.90	8439.482	3048.342	−768.876	−3273.047	−4688.606	−5208.234	−4996.963	−4195.776	−2924.769
.91	9843.793	3755.629	−635.153	−3584.768	−5317.061	−6027.257	−5885.302	−5038.832	−3615.808
.92	11496.367	4612.649	−441.381	−3914.418	−6027.075	−6974.785	−6930.419	−6046.643	−4458.048
.93	13442.798	5650.380	−171.019	−4259.158	−6828.170	−8070.700	−8159.867	−7251.054	−5483.542
.94	15737.231	6906.142	196.472	−4614.559	−7730.632	−9337.822	−9605.977	−8689.996	−6731.010
.95	18444.006	8424.895	686.528	−4974.122	−8745.481	−10802.326	−11306.680	−10408.651	−8247.215
.96	21639.588	10260.784	1330.595	−5328.664	−9884.379	−12494.177	−13306.444	−12460.807	−10088.597
.97	25414.836	12478.986	2167.467	−5665.537	−11159.459	−14447.594	−15657.343	−14910.451	−12323.228
.98	29877.793	15157.958	3244.927	−5967.684	−12583.128	−16701.606	−18420.350	−17833.703	−15033.193
.99	35156.905	18392.098	4621.724	−6212.428	−14167.706	−19300.604	−21666.774	−21321.037	−18317.396

Z	J 14, 10	J 14, 11	J 14, 12	J 14, 13	J 14, 14
.01	1.041	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500	2.500
.20	2.649	2.649	2.649	2.649	2.649
.21	2.809	2.810	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983	2.983
.23	3.169	3.171	3.171	3.171	3.171
.24	3.372	3.374	3.375	3.375	3.375
.25	3.592	3.595	3.596	3.596	3.596
.26	3.830	3.834	3.835	3.836	3.836
.27	4.088	4.094	4.096	4.097	4.097
.28	4.369	4.377	4.380	4.381	4.381
.29	4.674	4.686	4.689	4.691	4.691
.30	5.007	5.022	5.027	5.029	5.029
.31	5.368	5.389	5.396	5.398	5.399
.32	5.763	5.790	5.800	5.803	5.804
.33	6.193	6.229	6.242	6.247	6.249
.34	6.663	6.709	6.727	6.734	6.736
.35	7.176	7.236	7.260	7.270	7.273
.36	7.736	7.815	7.847	7.859	7.864
.37	8.350	8.451	8.492	8.510	8.517
.38	9.020	9.150	9.205	9.228	9.238
.39	9.755	9.919	9.991	10.022	10.036
.40	10.559	10.768	10.861	10.902	10.921
.41	11.441	11.703	11.824	11.879	11.904
.42	12.406	12.736	12.892	12.964	12.997
.43	13.465	13.877	14.077	14.172	14.217
.44	14.625	15.140	15.394	15.518	15.578
.45	15.898	16.536	16.859	17.021	17.100
.46	17.293	18.083	18.492	18.701	18.806
.47	18.823	19.797	20.313	20.582	20.721
.48	20.500	21.698	22.346	22.692	22.875
.49	22.337	23.808	24.619	25.062	25.301
.50	24.351	26.149	27.163	27.727	28.038

Z	J 14, 10	J 14, 11	J 14, 12	J 14, 13	J 14, 14
.51	26.555	28.750	30.013	30.730	31.133
.52	28.968	31.640	33.208	34.117	34.638
.53	31.607	34.852	36.795	37.943	38.614
.54	34.490	38.423	40.824	42.270	43.132
.55	37.638	42.394	45.355	47.172	48.276
.56	41.069	46.812	50.454	52.732	54.141
.57	44.805	51.726	56.197	59.046	60.841
.58	48.866	57.192	62.670	66.225	68.505
.59	53.271	63.271	69.972	74.397	77.287
.60	58.039	70.033	78.213	83.713	87.367
.61	63.186	77.550	87.522	94.343	98.953
.62	68.725	85.905	98.041	106.486	112.292
.63	74.663	95.186	109.935	120.373	127.672
.64	81.002	105.490	123.391	136.272	145.429
.65	87.733	116.921	138.618	154.493	165.962
.66	94.835	129.589	155.858	175.394	189.738
.67	102.271	143.613	175.382	199.393	217.307
.68	109.983	159.119	197.498	226.975	249.316
.69	117.884	176.234	222.557	258.702	286.529
.70	125.851	195.091	250.952	295.230	329.848
.71	133.718	215.822	283.131	337.320	380.338
.72	141.260	238.554	319.595	385.855	439.259
.73	148.179	263.404	360.910	441.866	508.101
.74	154.086	290.470	407.714	506.552	588.629
.75	158.477	319.822	460.719	581.308	682.937
.76	160.706	351.488	520.720	667.757	793.505
.77	159.946	385.435	588.605	767.793	923.283
.78	155.147	421.548	665.356	883.617	1075.773
.79	144.981	459.596	752.058	1017.797	1255.139
.80	127.776	499.198	849.903	1173.321	1466.338
.81	101.433	539.772	960.188	1353.670	1715.274
.82	63.324	580.469	1084.316	1562.897	2008.983
.83	10.166	620.101	1223.787	1805.723	2355.856
.84	−62.128	657.032	1380.184	2087.640	2765.910
.85	−158.641	689.058	1555.149	2415.041	3251.107
.86	−285.684	713.242	1750.346	2795.360	3825.741
.87	−451.071	725.717	1967.407	3237.238	4506.907
.88	−664.475	721.431	2207.855	3750.715	5315.061
.89	−937.842	693.839	2472.998	4347.446	6274.693
.90	−1285.917	634.500	2763.781	5040.949	7415.133
.91	−1726.867	532.600	3080.597	5846.888	8771.540
.92	−2283.060	374.331	3423.020	6783.393	10386.068
.93	−2982.000	142.145	3789.471	7871.426	12309.289
.94	−3857.477	−186.195	4176.762	9135.176	14601.885
.95	−4950.958	−638.767	4579.525	10602.527	17336.722
.96	−6313.294	−1250.941	4989.458	12305.558	20601.321
.97	−8006.765	−2067.146	5394.355	14281.080	24500.799
.98	−10107.608	−3143.072	5776.886	16571.263	29161.516
.99	−12709.042	−4548.371	6113.010	19224.271	34735.349

Z	J 15, 1	J 15, 2	J 15, 3	J 15, 4	J 15, 5	J 15, 6	J 15, 7	J 15, 8	J 15, 9
.01	0.134	−13.377	0.753	1.037	1.041	1.041	1.041	1.041	1.041
.02	0.275	−13.768	0.491	1.067	1.085	1.085	1.085	1.085	1.085
.03	0.425	−14.175	0.214	1.090	1.130	1.132	1.132	1.132	1.132
.04	0.584	−14.598	−0.080	1.105	1.177	1.181	1.181	1.181	1.181
.05	0.753	−15.037	−0.392	1.112	1.226	1.233	1.234	1.234	1.234
.06	0.932	−15.494	−0.723	1.109	1.276	1.289	1.290	1.290	1.290
.07	1.123	−15.969	−1.074	1.096	1.326	1.348	1.350	1.350	1.350
.08	1.326	−16.463	−1.446	1.071	1.377	1.410	1.414	1.414	1.414
.09	1.542	−16.978	−1.841	1.034	1.428	1.476	1.482	1.482	1.482
.10	1.773	−17.514	−2.261	0.983	1.479	1.546	1.554	1.555	1.555
.11	2.019	−18.072	−2.707	0.917	1.528	1.619	1.631	1.633	1.633
.12	2.282	−18.653	−3.180	0.835	1.575	1.695	1.714	1.716	1.717
.13	2.564	−19.260	−3.684	0.735	1.620	1.776	1.801	1.805	1.806
.14	2.865	−19.892	−4.219	0.615	1.662	1.860	1.895	1.901	1.902
.15	3.188	−20.551	−4.789	0.474	1.699	1.947	1.995	2.003	2.005
.16	3.534	−21.239	−5.394	0.310	1.730	2.038	2.101	2.113	2.115
.17	3.905	−21.957	−6.039	0.121	1.755	2.132	2.214	2.230	2.234
.18	4.303	−22.707	−6.725	−0.097	1.771	2.229	2.334	2.356	2.361
.19	4.732	−23.490	−7.457	−0.345	1.779	2.329	2.461	2.492	2.498
.20	5.192	−24.308	−8.236	−0.626	1.774	2.430	2.597	2.637	2.646
.21	5.688	−25.163	−9.066	−0.944	1.757	2.533	2.740	2.793	2.806
.22	6.222	−26.057	−9.951	−1.302	1.724	2.637	2.892	2.960	2.977
.23	6.798	−26.992	−10.895	−1.704	1.673	2.740	3.052	3.139	3.163
.24	7.420	−27.969	−11.903	−2.153	1.602	2.842	3.221	3.332	3.363
.25	8.091	−28.992	−12.979	−2.655	1.507	2.942	3.400	3.539	3.580
.26	8.816	−30.063	−14.128	−3.214	1.384	3.038	3.587	3.760	3.813
.27	9.601	−31.184	−15.356	−3.836	1.231	3.128	3.782	3.998	4.066
.28	10.452	−32.357	−16.668	−4.526	1.043	3.210	3.987	4.252	4.340
.29	11.373	−33.587	−18.072	−5.292	0.815	3.283	4.200	4.525	4.636
.30	12.373	−34.875	−19.574	−6.141	0.541	3.342	4.421	4.816	4.956
.31	13.458	−36.224	−21.181	−7.081	0.216	3.385	4.649	5.128	5.303
.32	14.638	−37.638	−22.903	−8.120	−0.167	3.409	4.883	5.460	5.679
.33	15.921	−39.120	−24.748	−9.268	−0.616	3.408	5.122	5.815	6.085
.34	17.319	−40.674	−26.725	−10.536	−1.140	3.378	5.364	6.192	6.525
.35	18.843	−42.302	−28.846	−11.936	−1.748	3.312	5.607	6.593	7.002
.36	20.506	−44.010	−31.122	−13.482	−2.451	3.205	5.848	7.018	7.517
.37	22.323	−45.800	−33.566	−15.186	−3.261	3.048	6.084	7.467	8.075
.38	24.310	−47.676	−36.190	−17.067	−4.191	2.833	6.312	7.941	8.678
.39	26.485	−49.642	−39.011	−19.140	−5.258	2.548	6.525	8.440	9.329
.40	28.870	−51.703	−42.045	−21.427	−6.478	2.183	6.719	8.963	10.032
.41	31.486	−53.862	−45.309	−23.948	−7.870	1.723	6.887	9.508	10.790
.42	34.361	−56.122	−48.822	−26.728	−9.458	1.153	7.019	10.074	11.607
.43	37.524	−58.489	−52.606	−29.794	−11.264	0.454	7.105	10.659	12.485
.44	41.007	−60.964	−56.684	−33.176	−13.318	−0.394	7.135	11.258	13.429
.45	44.848	−63.551	−61.081	−36.907	−15.650	−1.415	7.093	11.867	14.441
.46	49.090	−66.253	−65.824	−41.023	−18.297	−2.637	6.962	12.479	15.523
.47	53.780	−69.071	−70.943	−45.566	−21.298	−4.091	6.722	13.086	16.679
.48	58.973	−72.006	−76.472	−50.582	−24.698	−5.814	6.350	13.677	17.908
.49	64.731	−75.059	−82.446	−56.121	−28.549	−7.849	5.817	14.240	19.213
.50	71.124	−78.228	−88.903	−62.240	−32.908	−10.242	5.091	14.757	20.591

Z	J 15, 1	J 15, 2	J 15, 3	J 15, 4	J 15, 5	J 15, 6	J 15, 7	J 15, 8	J 15, 9
.51	78.233	−81.509	−95.887	−69.003	−37.842	−13.051	4.132	15.210	22.040
.52	86.150	−84.896	−103.443	−76.481	−43.426	−16.339	2.894	15.571	23.555
.53	94.981	−88.380	−111.622	−84.753	−49.743	−20.179	1.323	15.812	25.129
.54	104.845	−91.949	−120.480	−93.907	−56.889	−24.659	−0.644	15.893	26.751
.55	115.882	−95.586	−130.074	−104.042	−64.975	−29.875	−3.083	15.771	28.405
.56	128.250	−99.268	−140.472	−115.270	−74.123	−35.941	−6.081	15.388	30.069
.57	142.133	−102.965	−151.741	−127.714	−84.475	−42.989	−9.743	14.678	31.716
.58	157.744	−106.639	−163.959	−141.512	−96.191	−51.169	−14.191	13.559	33.310
.59	175.326	−110.240	−177.206	−156.820	−109.454	−60.658	−19.568	11.934	34.801
.60	195.162	−113.707	−191.570	−173.812	−124.473	−71.658	−26.043	9.683	36.131
.61	217.583	−116.961	−207.144	−192.684	−141.485	−84.403	−33.815	6.664	37.223
.62	242.968	−119.905	−224.028	−213.652	−160.762	−99.166	−43.118	2.704	37.979
.63	271.762	−122.417	−242.327	−236.963	−182.613	−116.260	−54.227	−2.402	38.278
.64	304.482	−124.346	−262.149	−262.889	−207.391	−136.052	−67.469	−8.903	37.969
.65	341.733	−125.506	−283.610	−291.737	−235.502	−158.964	−83.224	−17.099	36.864
.66	384.221	−125.665	−306.825	−323.849	−267.408	−185.490	−101.944	−27.347	34.729
.67	432.772	−124.540	−331.910	−359.609	−303.637	−216.200	−124.161	−40.079	31.275
.68	488.357	−121.780	−358.980	−399.444	−344.794	−251.759	−150.502	−55.812	26.145
.69	552.115	−116.957	−388.141	−443.831	−391.571	−292.940	−181.709	−75.168	18.900
.70	625.388	−109.541	−419.489	−493.300	−444.761	−340.640	−218.654	−98.893	8.999
.71	709.754	−98.887	−453.098	−548.441	−505.271	−395.907	−262.372	−127.883	−4.223
.72	807.080	−84.201	−489.016	−609.909	−574.139	−459.960	−314.084	−163.214	−21.583
.73	919.569	−64.512	−527.248	−678.426	−652.553	−534.217	−375.233	−206.178	−44.080
.74	1049.829	−38.631	−567.743	−754.788	−741.874	−620.334	−447.527	−258.328	−72.943
.75	1200.952	−5.101	−610.370	−839.870	−843.655	−720.240	−532.987	−321.530	−109.673
.76	1376.605	37.860	−654.895	−934.624	−959.676	−836.184	−634.007	−398.025	−156.112
.77	1581.148	92.432	−700.944	−1040.085	−1091.968	−970.791	−753.418	−490.509	−214.510
.78	1819.768	161.283	−747.964	−1157.367	−1242.849	−1127.122	−894.579	−602.220	−287.621
.79	2098.642	247.676	−795.162	−1287.657	−1414.965	−1308.745	−1061.465	−737.054	−378.813
.80	2425.137	355.603	−841.440	−1432.207	−1611.327	−1519.828	−1258.793	−899.696	−492.204
.81	2808.050	489.950	−885.305	−1592.312	−1835.359	−1765.227	−1492.151	−1095.781	−632.827
.82	3257.895	656.690	−924.761	−1769.289	−2090.948	−2050.608	−1768.166	−1332.088	−806.832
.83	3787.249	863.133	−957.163	−1964.431	−2382.495	−2382.573	−2094.698	−1616.773	−1021.734
.84	4411.177	1118.223	−979.049	−2178.959	−2714.972	−2768.817	−2481.066	−1959.652	−1286.713
.85	5147.734	1432.901	−985.915	−2413.936	−3093.977	−3218.302	−2938.324	−2372.537	−1612.983
.86	6018.582	1820.553	−971.941	−2670.169	−3525.793	−3741.456	−3479.577	−2869.642	−2014.238
.87	7049.733	2297.560	−929.644	−2948.061	−4017.436	−4350.407	−4120.368	−3468.074	−2507.199
.88	8272.443	2883.965	−849.452	−3247.427	−4576.706	−5059.244	−4879.119	−4188.420	−3112.279
.89	9724.300	3604.290	−719.159	−3567.240	−5212.220	−5884.318	−5777.665	−5055.454	−3854.398
.90	11450.532	4488.545	−523.263	−3905.307	−5933.422	−6844.574	−6841.874	−6098.981	−4763.960
.91	13505.603	5573.446	−242.124	−4257.842	−6750.577	−7961.937	−8102.380	−7354.858	−5878.066
.92	15955.133	6903.923	149.069	−4618.919	−7674.708	−9261.735	−9595.445	−8866.211	−7241.970
.93	18878.232	8534.948	681.587	−4979.757	−8717.487	−10773.166	−11363.968	−10684.903	−8910.856
.94	22370.302	10533.772	1394.764	−5327.813	−9891.030	−12529.809	−13458.656	−12873.262	−10951.993
.95	26546.475	12982.675	2337.979	−5645.616	−11207.606	−14570.194	−15939.415	−15506.199	−13447.367
.96	31545.750	15982.314	3573.114	−5909.289	−12679.184	−16938.399	−18876.958	−18673.697	−16496.861
.97	37535.942	19655.784	5177.595	−6086.652	−14316.764	−19684.649	−22354.635	−22483.766	−20222.088
.98	44719.826	24153.648	7248.157	−6134.849	−16129.506	−22865.997	−26470.648	−27066.041	−24771.102
.99	53342.414	29660.002	9905.489	−5997.316	−18123.472	−26546.922	−31340.507	−32575.981	−30324.029

Z	J 15, 10	J 15, 11	J 15, 12	J 15, 13	J 15, 14	J 15, 15
.01	1.041	1.041	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500	2.500	2.500
.20	2.648	2.649	2.649	2.649	2.649	2.649
.21	2.809	2.810	2.810	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983	2.983	2.983
.23	3.169	3.171	3.171	3.171	3.171	3.171
.24	3.372	3.374	3.375	3.375	3.375	3.375
.25	3.591	3.595	3.596	3.596	3.596	3.596
.26	3.829	3.834	3.835	3.836	3.836	3.836
.27	4.088	4.094	4.096	4.097	4.097	4.097
.28	4.368	4.377	4.380	4.381	4.381	4.381
.29	4.673	4.685	4.689	4.690	4.691	4.691
.30	5.005	5.021	5.027	5.029	5.029	5.029
.31	5.366	5.388	5.396	5.398	5.399	5.399
.32	5.759	5.789	5.799	5.803	5.804	5.805
.33	6.189	6.227	6.241	6.247	6.248	6.249
.34	6.657	6.707	6.726	6.734	6.736	6.737
.35	7.168	7.233	7.259	7.269	7.273	7.274
.36	7.726	7.811	7.845	7.859	7.864	7.866
.37	8.335	8.445	8.490	8.509	8.516	8.519
.38	9.002	9.142	9.202	9.227	9.237	9.242
.39	9.731	9.909	9.987	10.021	10.035	10.041
.40	10.528	10.754	10.855	10.900	10.920	10.929
.41	11.400	11.685	11.816	11.876	11.903	11.915
.42	12.354	12.712	12.881	12.960	12.996	13.013
.43	13.399	13.846	14.063	14.166	14.215	14.238
.44	14.541	15.099	15.375	15.510	15.575	15.607
.45	15.790	16.484	16.835	17.010	17.097	17.139
.46	17.157	18.015	18.460	18.687	18.802	18.859
.47	18.650	19.710	20.271	20.564	20.715	20.793
.48	20.282	21.586	22.291	22.668	22.866	22.970
.49	22.064	23.664	24.548	25.029	25.289	25.428
.50	24.007	25.966	27.070	27.684	28.023	28.208

Z	J 15, 10	J 15, 11	J 15, 12	J 15, 13	J 15, 14	J 15, 15
.51	26.125	28.516	29.892	30.673	31.113	31.358
.52	28.431	31.342	33.052	34.043	34.611	34.934
.53	30.936	34.474	36.594	37.846	38.578	39.003
.54	33.655	37.945	40.566	42.145	43.086	43.642
.55	36.599	41.791	45.024	47.009	48.215	48.940
.56	39.780	46.051	50.030	52.520	54.061	55.005
.57	43.206	50.768	55.656	58.772	60.735	61.961
.58	46.885	55.988	61.982	65.871	68.367	69.954
.59	50.820	61.761	69.096	73.943	77.108	79.157
.60	55.009	68.140	77.102	83.129	87.135	89.772
.61	59.443	75.181	86.113	93.593	98.652	102.041
.62	64.105	82.942	96.257	105.527	111.903	116.246
.63	68.965	91.484	107.679	119.147	127.169	132.724
.64	73.977	100.869	120.541	134.706	144.781	151.874
.65	79.077	111.156	135.022	152.496	165.127	174.166
.66	84.174	122.402	151.324	172.850	188.664	200.164
.67	89.144	134.659	169.671	196.155	215.927	230.533
.68	93.823	147.967	190.309	222.858	247.545	266.069
.69	97.991	162.350	213.511	253.471	284.258	307.720
.70	101.365	177.811	239.575	288.587	326.939	356.616
.71	103.578	194.318	268.827	328.887	376.613	414.107
.72	104.155	211.796	301.616	375.156	434.491	481.811
.73	102.493	230.108	338.317	428.297	502.002	561.661
.74	97.822	249.037	379.325	489.345	580.829	655.979
.75	89.167	268.258	425.046	559.491	672.964	767.549
.76	75.294	287.302	475.894	640.097	780.756	899.714
.77	54.651	305.518	532.268	732.724	906.985	1056.499
.78	25.284	322.013	594.539	839.150	1054.938	1242.745
.79	−15.256	335.586	663.019	961.404	1228.501	1464.292
.80	−70.038	344.632	737.919	1101.788	1432.275	1728.179
.81	−142.899	347.039	819.297	1262.908	1671.707	2042.911
.82	−238.631	340.035	906.990	1447.701	1953.246	2418.766
.83	−363.211	320.013	1000.510	1659.462	2284.526	2868.183
.84	−524.085	282.304	1098.927	1901.866	2674.593	3406.223
.85	−730.523	220.882	1200.693	2178.982	3134.159	4051.146
.86	−994.051	128.012	1303.432	2495.276	3675.907	4825.104
.87	−1328.997	−6.213	1403.650	2855.597	4314.860	5754.998
.88	−1753.149	−194.443	1496.370	3265.137	5068.803	6873.521
.89	−2288.581	−452.784	1574.651	3729.351	5958.786	8220.441
.90	−2962.667	−801.705	1628.979	4253.830	7009.708	9844.159
.91	−3809.330	−1267.160	1646.468	4844.100	8251.016	11803.643
.92	−4870.588	−1882.005	1609.851	5505.330	9717.504	14170.770
.93	−6198.453	−2687.757	1496.181	6241.905	11450.262	17033.231
.94	−7857.261	−3736.798	1275.166	7056.819	13497.754	20498.044
.95	−9926.563	−5095.132	907.061	7950.862	15917.104	24695.934
.96	−12504.661	−6845.809	339.975	8921.482	18775.557	29786.665
.97	−15712.934	−9093.190	−493.547	9961.241	22152.127	35965.536
.98	−19701.208	−11968.274	−1680.851	11055.790	26139.564	43471.491
.99	−24654.275	−15635.301	−3334.657	12181.121	30846.500	52596.936

Z	J 16, 1	J 16, 2	J 16, 3	J 16, 4	J 16, 5	J 16, 6	J 16, 7	J 16, 8	J 16, 9
.01	0.144	−14.408	0.732	1.037	1.041	1.041	1.041	1.041	1.041
.02	0.296	−14.831	0.449	1.066	1.085	1.085	1.085	1.085	1.085
.03	0.458	−15.271	0.148	1.087	1.130	1.132	1.132	1.132	1.132
.04	0.629	−15.728	−0.171	1.100	1.177	1.181	1.181	1.181	1.181
.05	0.811	−16.203	−0.509	1.103	1.225	1.233	1.234	1.234	1.234
.06	1.005	−16.698	−0.867	1.096	1.275	1.289	1.290	1.290	1.290
.07	1.211	−17.212	−1.248	1.077	1.325	1.348	1.350	1.350	1.350
.08	1.430	−17.747	−1.652	1.046	1.375	1.410	1.414	1.414	1.414
.09	1.663	−18.305	−2.081	1.001	1.424	1.476	1.481	1.482	1.482
.10	1.913	−18.885	−2.537	0.941	1.473	1.545	1.554	1.555	1.555
.11	2.179	−19.490	−3.021	0.865	1.520	1.618	1.631	1.633	1.633
.12	2.464	−20.120	−3.535	0.771	1.565	1.694	1.713	1.716	1.717
.13	2.768	−20.778	−4.082	0.657	1.607	1.774	1.801	1.805	1.806
.14	3.094	−21.463	−4.664	0.522	1.644	1.857	1.894	1.901	1.902
.15	3.443	−22.179	−5.283	0.363	1.676	1.943	1.994	2.003	2.005
.16	3.818	−22.925	−5.941	0.178	1.702	2.033	2.100	2.113	2.115
.17	4.220	−23.705	−6.642	−0.034	1.720	2.125	2.212	2.230	2.234
.18	4.652	−24.519	−7.389	−0.277	1.728	2.220	2.332	2.356	2.361
.19	5.116	−25.369	−8.184	−0.554	1.725	2.316	2.458	2.491	2.498
.20	5.616	−26.258	−9.032	−0.867	1.710	2.414	2.593	2.636	2.646
.21	6.154	−27.187	−9.936	−1.221	1.679	2.513	2.735	2.791	2.805
.22	6.734	−28.159	−10.901	−1.618	1.631	2.611	2.885	2.958	2.977
.23	7.360	−29.175	−11.930	−2.064	1.562	2.708	3.043	3.137	3.162
.24	8.035	−30.239	−13.028	−2.562	1.470	2.803	3.210	3.329	3.362
.25	8.765	−31.352	−14.201	−3.118	1.351	2.893	3.385	3.534	3.578
.26	9.554	−32.518	−15.455	−3.738	1.202	2.978	3.568	3.755	3.812
.27	10.409	−33.738	−16.794	−4.426	1.017	3.055	3.759	3.990	4.064
.28	11.335	−35.017	−18.227	−5.191	0.793	3.122	3.958	4.243	4.337
.29	12.339	−36.357	−19.760	−6.038	0.524	3.177	4.163	4.512	4.632
.30	13.429	−37.762	−21.401	−6.978	0.204	3.215	4.375	4.800	4.951
.31	14.613	−39.234	−23.158	−8.017	−0.174	3.233	4.592	5.107	5.296
.32	15.901	−40.777	−25.041	−9.167	−0.618	3.227	4.813	5.434	5.669
.33	17.303	−42.395	−27.060	−10.437	−1.136	3.192	5.036	5.782	6.073
.34	18.831	−44.093	−29.225	−11.841	−1.738	3.122	5.259	6.150	6.509
.35	20.498	−45.873	−31.548	−13.390	−2.435	3.010	5.479	6.540	6.981
.36	22.319	−47.740	−34.043	−15.101	−3.238	2.848	5.693	6.952	7.490
.37	24.309	−49.698	−36.722	−16.989	−4.162	2.628	5.897	7.386	8.040
.38	26.488	−51.752	−39.603	−19.072	−5.222	2.339	6.085	7.841	8.634
.39	28.875	−53.906	−42.701	−21.369	−6.435	1.969	6.253	8.316	9.273
.40	31.494	−56.165	−46.034	−23.904	−7.821	1.504	6.392	8.809	9.961
.41	34.371	−58.532	−49.623	−26.701	−9.402	0.930	6.494	9.319	10.701
.42	37.535	−61.012	−53.489	−29.786	−11.203	0.226	6.549	9.843	11.495
.43	41.018	−63.610	−57.657	−33.191	−13.251	−0.626	6.544	10.376	12.346
.44	44.859	−66.329	−62.151	−36.948	−15.579	−1.653	6.465	10.913	13.255
.45	49.100	−69.173	−67.001	−41.096	−18.222	−2.880	6.295	11.446	14.224
.46	53.788	−72.145	−72.238	−45.677	−21.220	−4.341	6.013	11.967	15.254
.47	58.979	−75.247	−77.896	−50.737	−24.621	−6.072	5.595	12.465	16.345
.48	64.734	−78.479	−84.012	−56.327	−28.475	−8.116	5.012	12.924	17.495
.49	71.123	−81.843	−90.627	−62.508	−32.842	−10.521	4.231	13.329	18.702
.50	78.229	−85.336	−97.785	−69.343	−37.788	−13.344	3.211	13.656	19.961

Z	J 16, 1	J 16, 2	J 16, 3	J 16, 4	J 16, 5	J 16, 6	J 16, 7	J 16, 8	J 16, 9
.51	86.143	−88.955	−105.535	−76.905	−43.389	−16.650	1.906	13.879	21.265
.52	94.971	−92.691	−113.931	−85.276	−49.732	−20.515	0.260	13.966	22.602
.53	104.834	−96.536	−123.030	−94.548	−56.915	−25.025	−1.792	13.877	23.959
.54	115.873	−100.475	−132.895	−104.822	−65.049	−30.280	−4.328	13.562	25.316
.55	128.249	−104.487	−143.596	−116.213	−74.261	−36.397	−7.438	12.964	26.646
.56	142.148	−108.546	−155.207	−128.850	−84.697	−43.511	−11.229	12.010	27.915
.57	157.785	−112.617	−167.811	−142.878	−96.522	−51.776	−15.828	10.615	29.081
.58	175.409	−116.654	−181.494	−158.458	−109.924	−61.374	−21.383	8.674	30.088
.59	195.309	−120.599	−196.352	−175.773	−125.121	−72.514	−28.070	6.061	30.865
.60	217.823	−124.377	−212.488	−195.029	−142.358	−85.438	−36.096	2.624	31.324
.61	243.343	−127.895	−230.010	−216.454	−161.918	−100.429	−45.705	−1.821	31.354
.62	272.326	−131.033	−249.036	−240.308	−184.126	−117.815	−57.185	−7.495	30.816
.63	305.310	−133.643	−269.687	−266.882	−209.352	−137.977	−70.878	−14.663	29.537
.64	342.921	−135.541	−292.093	−296.502	−238.021	−161.360	−87.187	−23.647	27.304
.65	385.898	−136.495	−316.387	−329.534	−270.622	−188.481	−106.588	−34.832	23.851
.66	435.109	−136.219	−342.703	−366.391	−307.715	−219.944	−129.645	−48.684	18.850
.67	491.578	−134.356	−371.176	−407.533	−349.944	−256.453	−157.027	−65.764	11.895
.68	556.514	−130.464	−401.935	−453.478	−398.048	−298.830	−189.524	−86.746	2.488
.69	631.347	−123.996	−435.100	−504.804	−452.879	−348.037	−228.076	−112.445	−9.988
.70	717.775	−114.277	−470.770	−562.156	−515.414	−405.197	−273.796	−143.841	−26.290
.71	817.811	−100.468	−509.017	−626.252	−586.777	−471.624	−328.006	−182.116	−47.352
.72	933.855	−81.534	−549.868	−697.891	−668.261	−548.857	−392.276	−228.699	−74.319
.73	1068.765	−56.197	−593.291	−777.957	−761.351	−638.699	−468.476	−285.311	−108.603
.74	1225.954	−22.874	−639.167	−867.422	−867.758	−743.262	−558.825	−354.032	−151.935
.75	1409.508	20.390	−687.259	−967.353	−989.442	−865.023	−665.968	−437.372	−206.447
.76	1624.321	76.010	−737.175	−1078.913	−1128.659	−1006.884	−793.054	−538.369	−274.756
.77	1876.266	146.976	−788.310	−1203.354	−1287.991	−1172.253	−943.834	−660.690	−360.079
.78	2172.406	236.981	−839.781	−1342.017	−1470.403	−1365.125	−1122.782	−808.777	−466.371
.79	2521.246	350.597	−890.337	−1496.311	−1679.283	−1590.190	−1335.231	−987.999	−598.491
.80	2933.038	493.479	−938.248	−1667.694	−1918.502	−1852.949	−1587.548	−1204.860	−762.415
.81	3420.168	672.627	−981.161	−1857.635	−2192.473	−2159.856	−1887.329	−1467.235	−965.488
.82	3997.611	896.706	−1015.912	−2067.557	−2506.211	−2518.477	−2243.642	−1784.666	−1216.743
.83	4683.501	1176.450	−1038.295	−2298.762	−2865.400	−2937.685	−2667.319	−2168.716	−1527.289
.84	5499.829	1525.156	−1042.755	−2552.314	−3276.457	−3427.871	−3171.293	−2633.402	−1910.789
.85	6473.291	1959.304	−1022.011	−2828.892	−3746.590	−4001.203	−3771.011	−3195.724	−2384.052
.86	7636.334	2499.326	−966.568	−3128.575	−4283.851	−4671.907	−4484.920	−3876.296	−2967.759
.87	9028.441	3170.558	−864.094	−3450.558	−4897.177	−5456.600	−5335.049	−4700.124	−3687.355
.88	10697.707	4004.430	−698.643	−3792.778	−5596.396	−6374.665	−6347.697	−5697.542	−4574.154
.89	12702.779	5039.941	−449.655	−4151.402	−6392.202	−7448.672	−7554.252	−6905.354	−5666.686
.90	15115.229	6325.491	−90.701	−4520.159	−7296.068	−8704.843	−8992.152	−8368.199	−7012.366
.91	18022.499	7921.170	412.111	−4889.466	−8320.085	−10173.576	−10706.033	−10140.230	−8669.541
.92	21531.491	9901.589	1102.149	−5245.271	−9476.677	−11890.009	−12749.078	−12287.120	−10710.001
.93	25773.025	12359.411	2034.796	−5567.554	−10778.165	−13894.629	−15184.595	−14888.502	−13222.077
.94	30907.262	15409.726	3280.656	−5828.371	−12236.097	−16233.885	−18087.860	−18040.887	−16314.406
.95	37130.480	19195.516	4929.601	−5989.331	−13860.316	−18960.850	−21548.301	−21861.225	−20120.608
.96	44683.351	23894.435	7095.864	−5998.327	−15657.611	−22135.830	−25672.014	−26491.161	−24804.977
.97	53861.077	29727.184	9924.438	−5785.311	−17629.820	−25826.865	−30584.633	−32102.104	−30569.414
.98	65026.074	36968.036	13599.159	−5256.900	−19771.305	−30110.182	−36434.745	−38901.431	−37662.025
.99	78623.383	45957.778	18352.827	−4289.414	−22065.442	−35070.314	−43397.678	−47139.783	−46387.501

Z	J 16, 10	J 16, 11	J 16, 12	J 16, 13	J 16, 14	J 16, 15	J 16, 16
.01	1.041	1.041	1.041	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500	2.500	2.500	2.500
.20	2.648	2.649	2.649	2.649	2.649	2.649	2.649
.21	2.809	2.810	2.810	2.810	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983	2.983	2.983	2.983
.23	3.169	3.171	3.171	3.171	3.171	3.171	3.171
.24	3.372	3.374	3.375	3.375	3.375	3.375	3.375
.25	3.591	3.595	3.596	3.596	3.596	3.596	3.596
.26	3.829	3.834	3.835	3.836	3.836	3.836	3.836
.27	4.087	4.094	4.096	4.097	4.097	4.097	4.097
.28	4.367	4.377	4.380	4.381	4.381	4.381	4.381
.29	4.672	4.685	4.689	4.690	4.691	4.691	4.691
.30	5.003	5.021	5.027	5.029	5.029	5.029	5.029
.31	5.363	5.387	5.395	5.398	5.399	5.399	5.400
.32	5.756	5.788	5.799	5.803	5.804	5.805	5.805
.33	6.184	6.225	6.241	6.246	6.248	6.249	6.249
.34	6.650	6.705	6.726	6.733	6.736	6.737	6.738
.35	7.159	7.230	7.258	7.269	7.273	7.274	7.275
.36	7.715	7.806	7.843	7.858	7.864	7.866	7.867
.37	8.321	8.439	8.488	8.508	8.516	8.519	8.521
.38	8.983	9.134	9.198	9.225	9.237	9.241	9.243
.39	9.706	9.899	9.983	10.019	10.034	10.041	10.044
.40	10.496	10.740	10.849	10.898	10.919	10.928	10.932
.41	11.359	11.667	11.808	11.872	11.901	11.914	11.920
.42	12.302	12.688	12.870	12.955	12.994	13.012	13.020
.43	13.331	13.815	14.048	14.159	14.212	14.237	14.248
.44	14.455	15.058	15.356	15.501	15.572	15.605	15.621
.45	15.681	16.430	16.809	16.998	17.092	17.138	17.160
.46	17.018	17.945	18.425	18.671	18.795	18.857	18.888
.47	18.475	19.620	20.225	20.542	20.706	20.790	20.832
.48	20.060	21.470	22.232	22.638	22.853	22.966	23.025
.49	21.784	23.514	24.470	24.991	25.272	25.422	25.502
.50	23.656	25.774	26.968	27.633	28.000	28.200	28.308

Z	J 16, 10	J 16, 11	J 16, 12	J 16, 13	J 16, 14	J 16, 15	J 16, 16
.51	25.684	28.271	29.760	30.606	31.081	31.346	31.493
.52	27.878	31.030	32.881	33.954	34.569	34.919	35.116
.53	30.246	34.077	36.372	37.729	38.522	38.982	39.247
.54	32.793	37.440	40.280	41.991	43.011	43.614	43.968
.55	35.524	41.151	44.656	46.808	48.116	48.904	49.374
.56	38.441	45.242	49.558	52.259	53.931	54.956	55.580
.57	41.541	49.745	55.050	58.432	60.564	61.896	62.721
.58	44.817	54.698	61.206	65.431	68.143	69.867	70.955
.59	48.253	60.136	68.105	73.373	76.814	79.041	80.472
.60	51.825	66.095	75.838	82.392	86.750	89.620	91.495
.61	55.498	72.610	84.502	92.643	98.151	101.840	104.292
.62	59.219	79.714	94.208	104.303	111.249	115.982	119.180
.63	62.917	87.433	105.075	117.573	126.319	132.377	136.541
.64	66.495	95.790	117.234	132.685	143.677	151.419	156.826
.65	69.822	104.791	130.828	149.901	163.696	173.571	180.580
.66	72.729	114.431	146.008	169.524	186.811	199.385	208.454
.67	74.992	124.679	162.936	191.896	213.529	229.517	241.229
.68	76.323	135.476	181.782	217.408	244.445	264.744	279.847
.69	76.351	146.719	202.721	246.501	280.255	305.992	325.439
.70	74.602	158.252	225.924	279.678	321.772	354.366	379.371
.71	70.471	169.845	251.561	317.504	369.949	411.180	443.290
.72	63.189	181.171	279.780	360.616	425.900	478.004	519.191
.73	51.783	191.778	310.702	409.727	490.929	556.714	609.487
.74	35.023	201.052	344.398	465.632	566.562	649.550	717.104
.75	11.356	208.165	380.864	529.208	654.581	759.196	845.597
.76	−21.170	212.017	419.991	601.421	757.071	888.863	999.285
.77	−65.013	211.156	461.512	683.319	876.466	1042.403	1183.429
.78	−123.258	203.678	504.948	776.022	1015.605	1224.432	1404.440
.79	−199.777	187.100	549.527	880.713	1177.796	1440.493	1670.146
.80	−299.424	158.196	594.075	998.605	1366.889	1697.245	1990.112
.81	−428.282	112.796	636.882	1130.899	1587.354	2002.687	2376.046
.82	−593.966	45.518	675.515	1278.722	1844.372	2366.441	2842.291
.83	−806.008	−50.561	706.591	1443.035	2143.931	2800.082	3406.445
.84	−1076.333	−184.323	725.460	1624.495	2492.931	3317.543	4090.123
.85	−1419.853	−367.149	725.815	1823.275	2899.290	3935.601	4919.909
.86	−1855.213	−613.589	699.167	2038.800	3372.057	4674.464	5928.529
.87	−2405.714	−942.222	634.180	2269.402	3921.510	5558.478	7156.322
.88	−3100.469	−1376.737	515.810	2511.836	4559.251	6616.981	8653.067
.89	−3975.848	−1947.306	324.185	2760.633	5298.260	7885.328	10480.253
.90	−5077.266	−2692.312	33.174	3007.237	6152.906	9406.119	12713.911
.91	−6461.427	−3660.538	−391.459	3238.848	7138.883	11230.688	15448.157
.92	−8199.105	−4913.928	−994.426	3436.885	8273.030	13420.875	18799.596
.93	−10378.618	−6531.074	−1833.952	3574.956	9572.983	16051.149	22912.844
.94	−13110.127	−8611.601	−2985.674	3616.172	11056.574	19211.138	27967.378
.95	−16531.020	−11281.711	−4547.627	3509.632	12740.913	23008.670	34186.177
.96	−20812.576	−14701.154	−6646.622	3185.795	14640.978	27573.373	41846.476
.97	−26168.207	−19071.973	−9446.375	2550.439	16767.532	33060.890	51293.143
.98	−32863.786	−24649.562	−13157.911	1476.783	19124.202	39657.982	62955.612
.99	−41230.347	−31756.493	−18052.788	−204.777	21703.283	47588.406	77368.861

Z	J 17, 1	J 17, 2	J 17, 3	J 17, 4	J 17, 5	J 17, 6	J 17, 7	J 17, 8	J 17, 9
.01	0.154	−15.438	0.712	1.036	1.041	1.041	1.041	1.041	1.041
.02	0.318	−15.893	0.406	1.065	1.084	1.085	1.085	1.085	1.085
.03	0.491	−16.366	0.082	1.084	1.130	1.132	1.132	1.132	1.132
.04	0.675	−16.858	−0.261	1.095	1.177	1.181	1.181	1.181	1.181
.05	0.870	−17.370	−0.626	1.094	1.225	1.233	1.234	1.234	1.234
.06	1.077	−17.902	−1.012	1.083	1.274	1.289	1.290	1.290	1.290
.07	1.298	−18.455	−1.422	1.059	1.323	1.348	1.350	1.350	1.350
.08	1.534	−19.031	−1.858	1.021	1.372	1.410	1.414	1.414	1.414
.09	1.785	−19.632	−2.321	0.969	1.421	1.475	1.481	1.482	1.482
.10	2.053	−20.257	−2.812	0.900	1.468	1.544	1.554	1.555	1.555
.11	2.339	−20.908	−3.335	0.813	1.513	1.617	1.631	1.633	1.633
.12	2.645	−21.588	−3.890	0.707	1.555	1.692	1.713	1.716	1.717
.13	2.972	−22.296	−4.480	0.579	1.593	1.771	1.801	1.805	1.806
.14	3.323	−23.035	−5.108	0.428	1.627	1.854	1.894	1.901	1.902
.15	3.699	−23.806	−5.777	0.251	1.654	1.939	1.993	2.003	2.005
.16	4.102	−24.611	−6.488	0.047	1.674	2.027	2.098	2.112	2.115
.17	4.535	−25.452	−7.245	−0.189	1.685	2.117	2.211	2.230	2.233
.18	5.001	−26.330	−8.052	−0.457	1.685	2.210	2.329	2.355	2.361
.19	5.501	−27.248	−8.912	−0.763	1.672	2.304	2.455	2.490	2.498
.20	6.040	−28.208	−9.829	−1.108	1.645	2.398	2.589	2.635	2.646
.21	6.620	−29.211	−10.807	−1.497	1.601	2.492	2.730	2.790	2.805
.22	7.246	−30.260	−11.850	−1.934	1.538	2.585	2.878	2.956	2.977
.23	7.921	−31.359	−12.964	−2.424	1.451	2.676	3.034	3.135	3.162
.24	8.651	−32.508	−14.153	−2.971	1.338	2.763	3.199	3.326	3.361
.25	9.439	−33.712	−15.423	−3.582	1.196	2.844	3.370	3.530	3.577
.26	10.293	−34.973	−16.781	−4.261	1.019	2.918	3.549	3.749	3.810
.27	11.216	−36.293	−18.233	−5.017	0.803	2.983	3.735	3.983	4.062
.28	12.218	−37.677	−19.786	−5.855	0.544	3.035	3.928	4.233	4.334
.29	13.305	−39.128	−21.448	−6.785	0.234	3.071	4.126	4.500	4.628
.30	14.485	−40.648	−23.228	−7.814	−0.133	3.088	4.329	4.784	4.945
.31	15.768	−42.243	−25.135	−8.954	−0.565	3.081	4.535	5.087	5.289
.32	17.164	−43.916	−27.180	−10.214	−1.069	3.046	4.743	5.408	5.660
.33	18.685	−45.671	−29.372	−11.607	−1.656	2.976	4.950	5.748	6.060
.34	20.343	−47.511	−31.724	−13.145	−2.336	2.866	5.154	6.108	6.493
.35	22.153	−49.443	−34.250	−14.844	−3.122	2.707	5.351	6.488	6.960
.36	24.132	−51.470	−36.963	−16.720	−4.026	2.491	5.538	6.887	7.463
.37	26.296	−53.597	−39.879	−18.791	−5.064	2.207	5.709	7.305	8.006
.38	28.666	−55.829	−43.015	−21.076	−6.253	1.845	5.859	7.740	8.590
.39	31.265	−58.170	−46.390	−23.598	−7.613	1.389	5.980	8.191	9.218
.40	34.119	−60.626	−50.023	−26.382	−9.165	0.826	6.064	8.656	9.891
.41	37.255	−63.202	−53.937	−29.453	−10.934	0.136	6.101	9.131	10.613
.42	40.708	−65.902	−58.156	−32.844	−12.948	−0.700	6.078	9.612	11.384
.43	44.513	−68.732	−62.707	−36.587	−15.238	−1.707	5.982	10.093	12.206
.44	48.712	−71.695	−67.619	−40.721	−17.840	−2.912	5.795	10.567	13.080
.45	53.352	−74.796	−72.923	−45.287	−20.794	−4.346	5.497	11.025	14.007
.46	58.488	−78.038	−78.654	−50.332	−24.145	−6.046	5.063	11.455	14.984
.47	64.179	−81.423	−84.850	−55.908	−27.946	−8.055	4.466	11.842	16.009
.48	70.496	−84.953	−91.554	−62.075	−32.255	−10.419	3.672	12.169	17.080
.49	77.518	−88.628	−98.811	−68.898	−37.138	−13.196	2.642	12.414	18.189
.50	85.337	−92.446	−106.671	−76.449	−42.672	−16.450	1.328	12.550	19.328

z	J 17, 1	J 17, 2	J 17, 3	J 17, 4	J 17, 5	J 17, 6	J 17, 7	J 17, 8	J 17, 9
.51	94.056	−96.402	−115.189	−84.812	−48.942	−20.256	−0.325	12.543	20.484
.52	103.797	−100.489	−124.425	−94.079	−56.047	−24.699	−2.382	12.352	21.641
.53	114.696	−104.695	−134.445	−104.353	−64.098	−29.881	−4.919	11.930	22.777
.54	126.913	−109.004	−145.321	−115.750	−73.223	−35.917	−8.028	11.215	23.864
.55	140.633	−113.392	−157.131	−128.401	−83.568	−42.941	−11.815	10.135	24.864
.56	156.069	−117.829	−169.961	−142.454	−95.298	−51.110	−16.407	8.603	25.732
.57	173.468	−122.274	−183.903	−158.074	−108.605	−60.603	−21.953	6.513	26.406
.58	193.117	−126.675	−199.060	−175.447	−123.707	−71.632	−28.629	3.735	26.812
.59	215.353	−130.963	−215.538	−194.784	−140.853	−84.440	−36.645	0.115	26.855
.60	240.568	−135.052	−233.457	−216.321	−160.331	−99.312	−46.246	−4.534	26.418
.61	269.218	−138.830	−252.942	−240.324	−182.468	−116.580	−57.725	−10.438	25.352
.62	301.844	−142.158	−274.127	−267.094	−207.645	−136.631	−71.426	−17.870	23.475
.63	339.075	−144.859	−297.153	−296.970	−236.295	−159.916	−87.760	−27.160	20.559
.64	381.658	−146.712	−322.169	−330.334	−268.918	−186.962	−107.213	−38.704	16.322
.65	430.470	−147.439	−349.328	−367.616	−306.092	−218.385	−130.360	−52.983	10.416
.66	486.554	−146.694	−378.784	−409.299	−348.481	−254.909	−157.886	−70.576	2.410
.67	551.142	−144.043	−410.690	−455.928	−396.850	−297.378	−190.606	−92.183	−8.228
.68	625.702	−138.944	−445.191	−508.115	−452.084	−346.784	−229.486	−118.651	−22.155
.69	711.980	−130.723	−482.417	−566.546	−515.201	−404.291	−275.682	−151.004	−40.180
.70	812.062	−118.538	−522.472	−631.986	−587.379	−471.266	−330.565	−190.480	−63.304
.71	928.442	−101.341	−565.418	−705.294	−669.976	−549.314	−395.777	−238.580	−92.759
.72	1064.114	−77.825	−611.258	−787.421	−764.563	−640.325	−473.272	−297.121	−130.063
.73	1222.672	−46.361	−659.909	−879.422	−872.950	−746.524	−565.389	−368.306	−177.091
.74	1408.446	−4.918	−711.168	−982.459	−997.229	−870.528	−674.924	−454.810	−236.155
.75	1626.658	49.038	−764.664	−1097.805	−1139.810	−1015.425	−805.220	−559.879	−310.108
.76	1883.625	118.667	−819.804	−1226.839	−1303.473	−1184.851	−960.284	−687.457	−402.470
.77	2186.999	207.915	−875.690	−1371.043	−1491.416	−1383.097	−1144.915	−842.339	−517.588
.78	2546.071	321.712	−931.020	−1531.981	−1707.318	−1615.220	−1364.871	−1030.359	−660.834
.79	2972.138	466.218	−983.952	−1711.276	−1955.398	−1887.187	−1627.057	−1258.622	−838.843
.80	3478.969	649.140	−1031.935	−1910.566	−2240.486	−2206.036	−1939.765	−1535.781	−1059.820
.81	4083.373	880.121	−1071.484	−2131.431	−2568.096	−2580.063	−2312.954	−1872.384	−1333.913
.82	4805.904	1171.236	−1097.888	−2375.300	−2944.498	−3019.049	−2758.586	−2281.297	−1673.679
.83	5671.743	1537.620	−1104.832	−2643.306	−3376.788	−3534.513	−3291.041	−2778.220	−2094.666
.84	6711.785	1998.250	−1083.917	−2936.089	−3872.961	−4140.012	−3927.601	−3382.320	−2616.126
.85	7964.003	2576.939	−1024.027	−3253.517	−4441.951	−4851.483	−4689.043	−4117.009	−3261.914
.86	9475.129	3303.586	−910.517	−3594.302	−5093.662	−5687.634	−5600.338	−5010.888	−4061.598
.87	11302.770	4215.757	−724.174	−3955.492	−5838.952	−6670.389	−6691.497	−6098.911	−5051.835
.88	13518.030	5360.674	−439.865	−4331.757	−6689.549	−7825.382	−7998.575	−7423.804	−6278.087
.89	16208.793	6797.739	−24.812	−4714.458	−7657.883	−9182.513	−9564.867	−9037.797	−7796.750
.90	19483.805	8601.705	563.640	−5090.376	−8756.773	−10776.534	−11442.322	−11004.735	−9677.790
.91	23477.808	10866.703	1380.886	−5440.044	−9998.932	−12647.697	−13693.233	−13402.667	−12008.028
.92	28357.927	13711.310	2498.732	−5735.515	−11396.204	−14842.404	−16392.205	−16326.975	−14895.202
.93	34331.689	17284.975	4010.114	−5937.427	−12958.424	−17413.851	−19628.484	−19894.205	−18473.007
.94	41656.998	21776.112	6035.148	−5991.112	−14691.766	−20422.593	−23508.648	−24246.675	−22907.325
.95	50654.734	27422.372	8728.890	−5821.520	−16596.430	−23937.016	−28159.771	−29558.128	−28403.969
.96	61724.470	34523.615	12291.268	−5326.529	−18663.370	−28033.542	−33733.041	−36040.526	−35218.242
.97	75364.043	43458.228	16979.789	−4368.201	−20869.739	−32796.398	−40407.822	−43952.188	−43666.671
.98	92194.397	54703.929	23125.833	−2761.389	−23172.740	−38316.901	−48396.395	−53607.750	−54141.661
.99	112990.404	68863.881	31155.440	−258.867	−25501.153	−44691.715	−57949.065	−65389.949	−67129.368

Z	J 17, 10	J 17, 11	J 17, 12	J 17, 13	J 17, 14	J 17, 15	J 17, 16	J 17, 17
.01	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
.20	2.648	2.649	2.649	2.649	2.649	2.649	2.649	2.649
.21	2.809	2.809	2.810	2.810	2.810	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983	2.983	2.983	2.983	2.983
.23	3.169	3.171	3.171	3.171	3.171	3.171	3.171	3.171
.24	3.371	3.374	3.375	3.375	3.375	3.375	3.375	3.375
.25	3.591	3.594	3.596	3.596	3.596	3.596	3.596	3.596
.26	3.828	3.834	3.835	3.836	3.836	3.836	3.836	3.836
.27	4.086	4.094	4.096	4.097	4.097	4.097	4.097	4.097
.28	4.366	4.376	4.380	4.381	4.381	4.381	4.381	4.381
.29	4.670	4.684	4.689	4.690	4.691	4.691	4.691	4.691
.30	5.001	5.020	5.026	5.028	5.029	5.029	5.029	5.029
.31	5.361	5.386	5.395	5.398	5.399	5.399	5.400	5.400
.32	5.753	5.786	5.798	5.803	5.804	5.805	5.805	5.805
.33	6.179	6.224	6.240	6.246	6.248	6.249	6.249	6.249
.34	6.644	6.702	6.725	6.733	6.736	6.737	6.738	6.738
.35	7.151	7.227	7.257	7.268	7.273	7.274	7.275	7.275
.36	7.704	7.802	7.842	7.857	7.864	7.866	7.867	7.867
.37	8.307	8.433	8.485	8.507	8.516	8.519	8.521	8.521
.38	8.964	9.126	9.195	9.224	9.236	9.241	9.243	9.244
.39	9.682	9.888	9.978	10.017	10.034	10.041	10.044	10.045
.40	10.465	10.726	10.843	10.895	10.918	10.928	10.932	10.934
.41	11.318	11.648	11.800	11.869	11.900	11.914	11.920	11.923
.42	12.249	12.664	12.859	12.950	12.992	13.011	13.020	13.024
.43	13.264	13.782	14.033	14.153	14.209	14.236	14.248	14.254
.44	14.369	15.016	15.335	15.492	15.567	15.604	15.621	15.629
.45	15.571	16.375	16.782	16.985	17.086	17.135	17.159	17.171
.46	16.878	17.874	18.390	18.653	18.787	18.854	18.887	18.903
.47	18.297	19.528	20.178	20.519	20.694	20.785	20.831	20.854
.48	19.836	21.351	22.170	22.607	22.838	22.959	23.022	23.055
.49	21.501	23.361	24.389	24.949	25.251	25.413	25.499	25.544
.50	23.300	25.578	26.862	27.578	27.972	28.187	28.304	28.367

Z	J 17, 10	J 17, 11	J 17, 12	J 17, 13	J 17, 14	J 17, 15	J 17, 16	J 17, 17
.51	25.237	28.020	29.622	30.532	31.044	31.329	31.487	31.574
.52	27.317	30.709	32.701	33.856	34.518	34.895	35.108	35.227
.53	29.543	33.667	36.139	37.600	38.455	38.950	39.235	39.398
.54	31.914	36.919	39.978	41.822	42.921	43.571	43.952	44.174
.55	34.427	40.489	44.266	46.586	47.996	48.845	49.352	49.654
.56	37.072	44.402	49.055	51.968	53.771	54.877	55.551	55.958
.57	39.836	48.682	54.404	58.052	60.353	61.790	62.681	63.229
.58	42.693	53.353	60.376	64.936	67.864	69.726	70.901	71.637
.59	45.612	58.437	67.041	72.729	76.446	78.853	80.398	81.384
.60	48.543	63.950	74.474	81.556	86.266	89.369	91.396	92.712
.61	51.420	69.906	82.758	91.560	97.516	101.506	104.159	105.910
.62	54.156	76.307	91.981	102.901	110.418	115.540	119.003	121.327
.63	56.632	83.144	102.233	115.761	125.231	131.793	136.303	139.381
.64	58.695	90.393	113.610	130.345	142.256	150.647	156.510	160.576
.65	60.144	98.003	126.210	146.884	161.843	172.554	180.159	185.519
.66	60.720	105.896	140.128	165.637	184.396	198.047	207.894	214.947
.67	60.091	113.951	155.454	186.891	210.386	227.757	240.487	249.747
.68	57.831	121.991	172.264	210.967	240.358	262.432	278.863	291.002
.69	53.397	129.772	190.616	238.219	274.943	302.959	324.136	340.022
.70	46.100	136.950	210.533	269.031	314.873	350.388	377.647	398.406
.71	35.065	143.065	231.990	303.821	360.993	405.968	441.012	468.102
.72	19.183	147.495	254.895	343.034	414.278	471.178	516.181	551.489
.73	−2.943	149.415	279.054	387.136	475.850	547.776	605.513	651.479
.74	−33.080	147.736	304.139	436.601	546.999	637.851	711.859	771.640
.75	−73.455	141.027	329.634	491.897	629.201	743.884	838.675	916.352
.76	−126.874	127.422	354.769	553.454	724.140	868.822	990.151	1091.003
.77	−196.870	104.490	378.433	621.627	833.726	1016.168	1171.375	1302.225
.78	−287.891	69.081	399.059	696.642	960.114	1190.080	1388.531	1558.203
.79	−405.531	17.117	414.471	778.516	1105.718	1395.497	1649.141	1869.048
.80	−556.831	−56.665	421.689	866.948	1273.216	1638.280	1962.370	2247.273
.81	−750.646	−159.046	416.666	961.169	1465.541	1925.374	2339.385	2708.388
.82	−998.115	−298.752	393.955	1059.741	1685.855	2265.007	2793.818	3271.646
.83	−1313.248	−486.994	346.267	1160.276	1937.495	2666.910	3342.312	3960.985
.84	−1713.668	−738.167	263.901	1259.062	2223.873	3142.569	4005.209	4806.212
.85	−2221.547	−1070.729	133.996	1350.563	2548.313	3705.518	4807.392	5844.498
.86	−2864.777	−1508.338	−60.434	1426.740	2913.809	4371.654	5779.311	7122.259
.87	−3678.450	−2081.294	−341.755	1476.153	3322.658	5159.600	6958.261	8697.549
.88	−4706.728	−2828.379	−739.345	1482.760	3775.918	6091.078	8389.938	10643.072
.89	−6005.179	−3799.215	−1291.704	1424.323	4272.650	7191.309	10130.361	13050.003
.90	−7643.734	−5057.259	−2049.188	1270.293	4808.822	8489.395	12248.217	16032.834
.91	−9710.404	−6683.627	−3077.556	979.018	5375.797	10018.685	14827.768	19735.524
.92	−12315.948	−8781.975	−4462.545	494.052	5958.225	11817.038	17972.380	24339.309
.93	−15599.759	−11484.711	−6315.794	−260.714	6531.140	13926.948	21808.878	30072.632
.94	−19737.229	−14960.896	−8782.489	−1387.450	7055.982	16395.378	26492.826	37223.738
.95	−24949.052	−19426.335	−12051.238	−3022.804	7475.194	19273.229	32215.053	46156.791
.96	−31512.877	−25156.393	−16366.809	−5348.943	7704.879	22614.152	39209.553	57332.338
.97	−39777.875	−32502.251	−22046.512	−8608.010	7624.877	26472.392	47763.047	71333.292
.98	−50183.142	−41911.675	−29501.362	−13121.066	7065.449	30899.384	58226.765	88898.322
.99	−63280.610	−53955.264	−39263.246	−19312.823	5789.369	35938.297	71030.519	110964.151

Z	J 18, 1	J 18, 2	J 18, 3	J 18, 4	J 18, 5	J 18, 6	J 18, 7	J 18, 8	J 18, 9
.01	0.165	−16.469	0.691	1.036	1.041	1.041	1.041	1.041	1.041
.02	0.339	−16.956	0.364	1.063	1.084	1.085	1.085	1.085	1.085
.03	0.524	−17.462	0.017	1.081	1.130	1.132	1.132	1.132	1.132
.04	0.720	−17.989	−0.352	1.089	1.176	1.181	1.181	1.181	1.181
.05	0.929	−18.536	−0.742	1.086	1.224	1.233	1.234	1.234	1.234
.06	1.150	−19.106	−1.157	1.070	1.272	1.289	1.290	1.290	1.290
.07	1.386	−19.698	−1.597	1.041	1.321	1.347	1.350	1.350	1.350
.08	1.638	−20.316	−2.064	0.996	1.369	1.409	1.413	1.414	1.414
.09	1.906	−20.959	−2.561	0.936	1.417	1.475	1.481	1.482	1.482
.10	2.193	−21.628	−3.088	0.858	1.462	1.543	1.554	1.555	1.555
.11	2.499	−22.327	−3.649	0.761	1.505	1.616	1.631	1.633	1.633
.12	2.826	−23.055	−4.244	0.643	1.545	1.691	1.713	1.716	1.717
.13	3.177	−23.814	−4.878	0.501	1.580	1.769	1.800	1.805	1.806
.14	3.552	−24.606	−5.553	0.334	1.609	1.851	1.893	1.901	1.902
.15	3.955	−25.434	−6.271	0.140	1.632	1.935	1.992	2.003	2.005
.16	4.387	−26.297	−7.035	−0.085	1.645	2.021	2.097	2.112	2.115
.17	4.851	−27.199	−7.849	−0.343	1.649	2.110	2.209	2.229	2.233
.18	5.349	−28.142	−8.716	−0.637	1.641	2.200	2.327	2.355	2.361
.19	5.886	−29.127	−9.640	−0.971	1.619	2.291	2.453	2.490	2.498
.20	6.464	−30.157	−10.626	−1.349	1.581	2.382	2.585	2.634	2.646
.21	7.086	−31.235	−11.678	−1.774	1.524	2.472	2.724	2.789	2.805
.22	7.758	−32.362	−12.800	−2.250	1.444	2.560	2.871	2.955	2.976
.23	8.483	−33.542	−13.998	−2.784	1.340	2.644	3.026	3.132	3.161
.24	9.266	−34.778	−15.278	−3.381	1.207	2.723	3.187	3.322	3.361
.25	10.114	−36.072	−16.645	−4.045	1.040	2.796	3.356	3.526	3.576
.26	11.031	−37.427	−18.107	−4.785	0.836	2.859	3.531	3.743	3.808
.27	12.024	−38.848	−19.671	−5.607	0.589	2.910	3.712	3.975	4.059
.28	13.101	−40.337	−21.345	−6.519	0.294	2.947	3.898	4.223	4.331
.29	14.271	−41.898	−23.136	−7.531	−0.057	2.965	4.089	4.487	4.623
.30	15.541	−43.535	−25.055	−8.651	−0.471	2.960	4.283	4.768	4.940
.31	16.923	−45.253	−27.112	−9.890	−0.956	2.929	4.478	5.066	5.281
.32	18.427	−47.055	−29.318	−11.261	−1.521	2.864	4.673	5.382	5.650
.33	20.067	−48.946	−31.684	−12.776	−2.176	2.760	4.864	5.715	6.048
.34	21.855	−50.930	−34.224	−14.450	−2.934	2.610	5.049	6.067	6.477
.35	23.808	−53.013	−36.952	−16.299	−3.809	2.404	5.223	6.436	6.939
.36	25.944	−55.200	−39.884	−18.340	−4.813	2.134	5.383	6.822	7.437
.37	28.282	−57.495	−43.036	−20.594	−5.965	1.787	5.521	7.223	7.972
.38	30.844	−59.905	−46.428	−23.081	−7.284	1.351	5.632	7.639	8.546
.39	33.655	−62.434	−50.079	−25.828	−8.790	0.810	5.707	8.066	9.162
.40	36.743	−65.088	−54.012	−28.859	−10.509	0.147	5.736	8.502	9.821
.41	40.140	−67.872	−58.252	−32.206	−12.466	−0.657	5.708	8.942	10.524
.42	43.881	−70.792	−62.824	−35.902	−14.693	−1.627	5.608	9.380	11.272
.43	48.008	−73.854	−67.758	−39.934	−17.225	−2.788	5.420	9.809	12.066
.44	52.565	−77.061	−73.087	−44.494	−20.101	−4.171	5.124	10.221	12.906
.45	57.605	−80.419	−78.844	−49.477	−23.366	−5.813	4.698	10.603	13.789
.46	63.187	−83.931	−85.070	−54.987	−27.070	−7.752	4.113	10.941	14.713
.47	69.379	−87.600	−91.805	−61.081	−31.272	−10.038	3.337	11.219	15.673
.48	76.259	−91.427	−99.097	−67.824	−36.036	−12.724	2.331	11.413	16.663
.49	83.914	−95.414	−106.996	−75.289	−41.436	−15.873	1.051	11.498	17.674
.50	92.446	−99.556	−115.558	−83.558	−47.558	−19.559	−0.559	11.441	18.691

Z	J 18, 1	J 18, 2	J 18, 3	J 18, 4	J 18, 5	J 18, 6	J 18, 7	J 18, 8	J 18, 9
.51	101.972	−103.851	−124.844	−92.722	−54.498	−23.864	−2.560	11.203	19.699
.52	112.626	−108.288	−134.921	−102.885	−62.366	−28.889	−5.028	10.734	20.675
.53	124.562	−112.855	−145.864	−114.163	−71.288	−34.744	−8.052	9.976	21.589
.54	137.960	−117.534	−157.752	−126.686	−81.406	−41.563	−11.737	8.858	22.403
.55	153.026	−122.299	−170.674	−140.600	−92.886	−49.498	−16.204	7.294	23.070
.56	170.003	−127.114	−184.725	−156.073	−105.916	−58.726	−21.602	5.178	23.530
.57	189.169	−131.934	−200.010	−173.290	−120.712	−69.453	−28.102	2.385	23.706
.58	210.853	−136.699	−216.644	−192.463	−137.521	−81.921	−35.909	−1.238	23.502
.59	235.436	−141.331	−234.749	−213.830	−156.628	−96.410	−45.266	−5.877	22.799
.60	263.365	−145.729	−254.459	−237.660	−178.360	−113.247	−56.459	−11.754	21.447
.61	295.169	−149.766	−275.915	−264.257	−203.095	−132.814	−69.830	−19.141	19.263
.62	331.465	−153.280	−299.272	−293.965	−231.266	−155.558	−85.783	−28.363	16.015
.63	372.986	−156.066	−324.688	−327.172	−263.374	−182.004	−104.799	−39.816	11.419
.64	420.597	−157.865	−352.334	−364.316	−299.999	−212.765	−127.450	−53.978	5.122
.65	475.324	−158.350	−382.381	−405.894	−341.807	−248.560	−154.416	−71.426	−3.314
.66	538.389	−157.113	−415.006	−452.465	−389.572	−290.236	−186.510	−92.861	−14.428
.67	611.247	−153.636	−450.379	−504.659	−444.186	−338.787	−224.697	−119.132	−28.888
.68	695.637	−147.273	−488.661	−563.188	−506.686	−395.382	−270.136	−151.267	−47.520
.69	793.644	−137.213	−529.993	−628.850	−578.268	−461.401	−324.206	−190.517	−71.345
.70	907.771	−122.436	−574.480	−702.540	−660.323	−538.469	−388.560	−238.397	−101.622
.71	1041.033	−101.664	−622.172	−785.261	−754.458	−628.505	−465.180	−296.751	−139.914
.72	1197.069	−73.292	−673.042	−878.127	−862.539	−733.776	−556.438	−367.823	−188.148
.73	1380.286	−35.303	−726.945	−982.375	−986.726	−856.961	−665.186	−454.345	−248.714
.74	1596.027	14.836	−783.576	−1099.365	−1129.524	−1001.232	−794.845	−559.645	−324.567
.75	1850.793	80.312	−842.405	−1230.586	−1293.828	−1170.340	−949.535	−687.788	−419.371
.76	2152.508	165.135	−902.597	−1377.643	−1482.990	−1368.732	−1134.210	−843.733	−537.668
.77	2510.860	274.356	−962.899	−1542.248	−1700.878	−1601.672	−1354.843	−1033.545	−685.092
.78	2937.712	414.348	−1021.494	−1726.190	−1951.952	−1875.402	−1618.631	−1264.642	−868.637
.79	3447.634	593.148	−1075.813	−1931.288	−2241.339	−2197.318	−1934.262	−1546.107	−1096.995
.80	4058.553	820.916	−1122.283	−2159.315	−2574.919	−2576.184	−2312.222	−1889.073	−1380.971
.81	4792.580	1110.499	−1155.991	−2411.891	−2959.405	−3022.382	−2765.180	−2307.195	−1734.008
.82	5677.042	1478.158	−1170.252	−2690.315	−3402.427	−3548.201	−3308.446	−2817.230	−2172.846
.83	6745.787	1944.505	−1156.037	−2995.334	−3912.604	−4168.181	−3960.530	−3439.764	−2718.342
.84	8040.821	2535.687	−1101.223	−3326.811	−4499.594	−4899.495	−4743.813	−4200.097	−3396.503
.85	9614.378	3284.907	−989.615	−3683.258	−5174.110	−5762.402	−5685.356	−5129.339	−4239.774
.86	11531.528	4234.367	−799.658	−4061.198	−5947.884	−6780.747	−6817.880	−6265.763	−5288.658
.87	13873.489	5437.765	−502.761	−4454.277	−6833.531	−7982.531	−8180.933	−7656.474	−6593.746
.88	16741.798	6963.488	−61.103	−4852.058	−7844.298	−9400.523	−9822.289	−9359.456	−8218.255
.89	20263.617	8898.702	575.238	−5238.379	−8993.600	−11072.928	−11799.621	−11446.100	−10241.218
.90	24598.436	11354.606	1472.025	−5589.119	−10294.287	−13044.063	−14182.474	−14004.295	−12761.460
.91	29946.613	14473.179	2715.753	−5869.211	−11757.522	−15365.039	−17054.609	−17142.242	−15902.602
.92	36560.198	18435.833	4420.025	−6028.598	−13391.085	−18094.347	−20516.740	−20993.102	−19819.294
.93	44756.716	23474.542	6733.869	−5996.829	−15196.921	−21298.311	−24689.736	−25720.695	−24705.035
.94	54936.630	29886.104	9852.572	−5675.826	−17167.583	−25051.195	−29718.269	−31526.408	−30801.884
.95	67605.707	38050.543	14031.811	−4930.247	−19281.249	−29434.898	−35775.050	−38657.671	−38412.665
.96	83403.421	48454.722	19606.058	−3574.654	−21494.694	−34537.826	−43065.531	−47418.174	−47916.116
.97	103139.000	61722.616	27012.497	−1356.458	−23733.479	−40452.552	−51833.013	−58180.132	−59785.667
.98	127837.785	78654.479	36822.232	2066.674	−25878.529	−47271.889	−62364.302	−71399.250	−74612.992
.99	158799.928	100276.958	49780.792	7156.744	−27747.579	−55082.309	−74995.347	−87632.394	−93136.979

Z	J 18, 10	J 18, 11	J 18, 12	J 18, 13	J 18, 14	J 18, 15	J 18, 16	J 18, 17	J 18, 18
.01	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
.02	1.085	1.085	1.085	1.085	1.085	1.085	1.085	1.085	1.085
.03	1.132	1.132	1.132	1.132	1.132	1.132	1.132	1.132	1.132
.04	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
.05	1.234	1.234	1.234	1.234	1.234	1.234	1.234	1.234	1.234
.06	1.290	1.290	1.290	1.290	1.290	1.290	1.290	1.290	1.290
.07	1.350	1.350	1.350	1.350	1.350	1.350	1.350	1.350	1.350
.08	1.414	1.414	1.414	1.414	1.414	1.414	1.414	1.414	1.414
.09	1.482	1.482	1.482	1.482	1.482	1.482	1.482	1.482	1.482
.10	1.555	1.555	1.555	1.555	1.555	1.555	1.555	1.555	1.555
.11	1.633	1.633	1.633	1.633	1.633	1.633	1.633	1.633	1.633
.12	1.717	1.717	1.717	1.717	1.717	1.717	1.717	1.717	1.717
.13	1.806	1.806	1.806	1.806	1.806	1.806	1.806	1.806	1.806
.14	1.902	1.902	1.902	1.902	1.902	1.902	1.902	1.902	1.902
.15	2.005	2.005	2.005	2.005	2.005	2.005	2.005	2.005	2.005
.16	2.115	2.115	2.115	2.115	2.115	2.115	2.115	2.115	2.115
.17	2.234	2.234	2.234	2.234	2.234	2.234	2.234	2.234	2.234
.18	2.362	2.362	2.362	2.362	2.362	2.362	2.362	2.362	2.362
.19	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
.20	2.648	2.649	2.649	2.649	2.649	2.649	2.649	2.649	2.649
.21	2.809	2.809	2.810	2.810	2.810	2.810	2.810	2.810	2.810
.22	2.982	2.983	2.983	2.983	2.983	2.983	2.983	2.983	2.983
.23	3.169	3.171	3.171	3.171	3.171	3.171	3.171	3.171	3.171
.24	3.371	3.374	3.375	3.375	3.375	3.375	3.375	3.375	3.375
.25	3.590	3.594	3.596	3.596	3.596	3.596	3.596	3.596	3.596
.26	3.828	3.834	3.835	3.836	3.836	3.836	3.836	3.836	3.836
.27	4.086	4.093	4.096	4.097	4.097	4.097	4.097	4.097	4.097
.28	4.365	4.376	4.380	4.381	4.381	4.381	4.381	4.381	4.381
.29	4.669	4.684	4.689	4.690	4.691	4.691	4.691	4.691	4.691
.30	4.999	5.019	5.026	5.028	5.029	5.029	5.029	5.029	5.029
.31	5.358	5.385	5.395	5.398	5.399	5.399	5.400	5.400	5.400
.32	5.749	5.785	5.798	5.803	5.804	5.805	5.805	5.805	5.805
.33	6.175	6.222	6.240	6.246	6.248	6.249	6.249	6.249	6.250
.34	6.638	6.700	6.724	6.733	6.736	6.737	6.738	6.738	6.738
.35	7.143	7.224	7.255	7.268	7.272	7.274	7.275	7.275	7.275
.36	7.693	7.798	7.840	7.857	7.863	7.866	7.867	7.867	7.868
.37	8.292	8.427	8.483	8.506	8.515	8.519	8.520	8.521	8.521
.38	8.946	9.118	9.192	9.223	9.236	9.241	9.243	9.244	9.244
.39	9.657	9.877	9.974	10.015	10.033	10.040	10.044	10.045	10.046
.40	10.433	10.712	10.837	10.892	10.917	10.927	10.932	10.934	10.935
.41	11.277	11.629	11.791	11.865	11.898	11.913	11.920	11.922	11.924
.42	12.196	12.639	12.848	12.945	12.990	13.010	13.020	13.024	13.026
.43	13.196	13.750	14.018	14.145	14.206	14.234	14.247	14.253	14.256
.44	14.282	14.973	15.315	15.482	15.563	15.602	15.620	15.629	15.633
.45	15.460	16.320	16.755	16.972	17.080	17.132	17.158	17.171	17.177
.46	16.738	17.802	18.354	18.635	18.778	18.850	18.885	18.903	18.912
.47	18.119	19.435	20.131	20.494	20.683	20.779	20.828	20.853	20.866
.48	19.611	21.231	22.107	22.575	22.822	22.952	23.019	23.054	23.072
.49	21.217	23.207	24.306	24.905	25.229	25.402	25.494	25.543	25.568
.50	22.941	25.379	26.754	27.520	27.941	28.172	28.297	28.364	28.400

Z	J 18, 10	J 18, 11	J 18, 12	J 18, 13	J 18, 14	J 18, 15	J 18, 16	J 18, 17	J 18, 18
.51	24.786	27.765	29.480	30.455	31.003	31.308	31.477	31.570	31.621
.52	26.751	30.383	32.516	33.754	34.463	34.867	35.094	35.222	35.293
.53	28.834	33.251	35.899	37.465	38.380	38.911	39.217	39.392	39.491
.54	31.026	36.389	39.667	41.643	42.821	43.518	43.926	44.164	44.302
.55	33.316	39.815	43.863	46.351	47.863	48.773	49.317	49.641	49.831
.56	35.685	43.545	48.535	51.659	53.594	54.780	55.503	55.940	56.203
.57	38.105	47.594	53.733	57.648	60.117	61.659	62.616	63.205	63.565
.58	40.536	51.974	59.511	64.407	67.551	69.550	70.812	71.603	72.096
.59	42.924	56.691	65.929	72.039	76.032	78.617	80.278	81.337	82.010
.60	45.196	61.742	73.047	80.657	85.719	89.053	91.233	92.648	93.561
.61	47.255	67.114	80.927	90.390	96.794	101.086	103.939	105.823	107.060
.62	48.973	72.781	89.634	101.380	109.467	114.979	118.706	121.209	122.879
.63	50.184	78.693	99.228	113.787	123.981	131.047	135.904	139.220	141.470
.64	50.675	84.776	109.766	127.786	140.616	149.657	155.974	160.357	163.380
.65	50.168	90.917	121.295	143.570	159.693	171.241	179.442	185.224	189.275
.66	48.310	96.959	133.847	161.348	181.580	196.308	206.935	214.547	219.966
.67	44.650	102.680	147.430	181.344	206.702	225.456	239.205	249.209	256.442
.68	38.611	107.777	162.015	203.797	235.541	259.393	277.152	290.276	299.913
.69	29.464	111.841	177.527	228.954	268.650	298.946	321.856	339.047	351.863
.70	16.281	114.327	193.818	257.063	306.655	345.095	374.610	397.096	414.113
.71	−2.111	114.509	210.642	288.362	350.265	398.988	436.970	466.342	488.905
.72	−27.195	111.434	227.621	323.067	400.276	461.978	510.805	549.128	579.002
.73	−60.850	103.850	244.199	361.341	457.576	535.654	598.364	648.313	687.821
.74	−105.447	90.123	259.575	403.271	523.148	621.879	702.356	767.397	819.588
.75	−163.979	68.126	272.624	448.813	598.066	722.839	826.044	910.667	979.548
.76	−240.228	35.097	281.790	497.736	683.483	841.089	973.362	1083.384	1174.217
.77	−338.971	−12.543	284.941	549.528	780.613	979.610	1149.055	1292.016	1411.711
.78	−466.238	−79.423	279.187	603.282	890.690	1141.869	1358.848	1544.518	1702.154
.79	−629.646	−171.526	260.633	657.530	1014.917	1331.885	1609.649	1850.698	2058.201
.80	−838.822	−296.570	224.059	710.023	1154.364	1554.291	1909.798	2222.654	2495.700
.81	−1105.930	−464.511	162.505	757.437	1309.841	1814.400	2269.354	2675.339	3034.538
.82	−1446.350	−688.181	66.721	794.966	1481.694	2118.254	2700.457	3227.248	3699.710
.83	−1879.538	−984.111	−75.553	815.792	1669.520	2472.661	3217.741	3901.291	4522.698
.84	−2430.112	−1373.590	−280.519	810.358	1871.761	2885.194	3838.838	4725.879	5543.218
.85	−3129.237	−1884.034	−569.552	765.408	2085.126	3364.139	4584.965	5736.282	6811.473
.86	−4016.383	−2550.737	−970.801	662.698	2303.796	3918.347	5481.620	6976.327	8391.027
.87	−5141.561	−3419.139	−1521.284	477.284	2518.305	4556.966	6559.387	8500.536	10362.505
.88	−6568.159	−4547.737	−2269.627	175.231	2714.013	5288.971	7854.865	10376.789	12828.349
.89	−8376.553	−6011.835	−3279.639	−289.424	2868.988	6122.411	9411.726	12689.670	15918.944
.90	−10668.682	−7908.378	−4634.981	−978.713	2951.119	7063.238	11281.889	15544.645	19800.497
.91	−13573.887	−10362.172	−6445.260	−1976.101	2914.173	8113.561	13526.812	19073.316	24685.239
.92	−17256.296	−13533.889	−8853.983	−3393.601	2692.429	9269.058	16218.839	23439.977	30844.576
.93	−21924.231	−17630.381	−12048.936	−5381.199	2193.398	10515.225	19442.553	28849.835	38626.133
.94	−27842.107	−22917.915	−16275.693	−8139.332	1287.959	11821.978	23295.979	35559.241	48475.748
.95	−35345.586	−29739.257	−21855.268	−11935.401	−202.956	13136.011	27891.517	43888.560	60966.098
.96	−44860.768	−38535.598	−29207.079	−17125.601	−2526.324	14369.995	33356.236	54238.170	76833.763
.97	−56928.402	−49874.659	−38878.798	−24183.695	−6021.201	15387.414	39831.039	67108.303	97027.188
.98	−72234.766	−64486.961	−51585.315	−33739.080	−11151.200	15981.521	47468.253	83123.983	122769.357
.99	−91650.486	−83312.189	−68259.271	−46626.858	−18548.047	15846.071	56426.383	103065.726	155638.857

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